University of Maryland, College Park National Pollutant Discharge Elimination System MS4 Phase II Combined 2016/FY2017 Annual Report General Discharge Permit #05-SF-5501

Table of Contents

List of Tables

List of Attachments

List of Acronyms

AWRP	Anacostia Watershed Restoration Partnership
AWS	Anacostia Watershed Society
BLM	Facilities Management—Department of Building & Landscape Maintenance
BMP	Best Management Practice
BWPFS	Baltimore-Washington Partners for Forest Stewardship
CAD	Computer-Aided Design
CBT	Chesapeake Bay Trust
COG	Metropolitan Washington Council of Governments
D&C	Facilities Management—Department of Design & Construction
DESSR	Department of Environmental Safety, Sustainability & Risk
E&E	Facility Management—Department of Engineering & Energy
E&SC	Erosion & Sediment Control
ESD	Environmental Site Design
FM	Facilities Management
FP	Facilities Management—Department of Facilities Planning
GIS	Geographic Information Systems software
HVAC	Heating, Ventilation, and Air Conditioning
IDDE	Illicit Discharge Detection and Elimination
IPM	Integrated Pest Management
MCM	Minimum Control Measure

MDE	Maryland Department of the Environment
MEP	Maximum Extent Practicable
MES	Maryland Environmental Services
MS4	Municipal Separate Storm Sewer System
NNI	Non-Native Invasive
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OS	Office of Sustainability
SOP	Standard Operating Procedure
SPCC Plan	Spill Prevention Control and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
UMD	University of Maryland-College Park

I. NPDES MS4 PERMIT UMD AUTHORIZATION

The University of Maryland-College Park (UMD) owns and operates a municipal separate storm sewer system (MS4) and, therefore, must comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems. Maryland Department of the Environment (MDE) has regulatory authority to implement this program under their General Discharge Permit No. 05-SF-5501. UMD submitted a Notice of Intent (NOI) in January of 2005, and MDE authorized coverage on October 20, 2005. Permit 05-SF-5501 expired on November 12, 2009; however, MDE has administratively extended the permit coverage and instructed MS4 permit holders to continue to implement the existing requirements until a new permit is issued.

The NPDES MS4 permit requires that permit holders implement Best Management Practices (BMPs) for the following Minimum Control Measures (MCMs):

- Personnel Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post Construction Management
- Pollution Prevention and Good Housekeeping

This annual report presents progress made on each of these MCMs, as well as challenges faced and steps taken to improve future performance.

II. UMD MS4 PERMIT ADMINISTRATION

A. Reporting Period

This report covers the period from January 1, 2016 through June 30, 2017.

Historically, UMD has reported on a calendar year basis. However, in consultation with MDE, the reporting period for this annual report was extended to include then entire FY17 fiscal year (July 1, 2016 thru June 31, 2017). This was done for several reasons:

- Historically, there was a significant lag between the end of the reporting period (December 31st) and the submission of the annual report (the following October). This one-time shift will significantly reduce this lag and allows UMD to report the most up-to-date progress.
- Reducing the reporting lag time allows MDE to provide comments on the most recent information. This ultimately allows UMD to take corrective actions and adaptively manage the permit in a more timely fashion.
- The draft MS4 permit (Permit #13-SF-5501) reporting period is based on the state fiscal year. Thus, this shift aligns well with the proposed fiscal year reporting cycle in the draft MS4 permit that UMD will be required to comply with once the permit is reissued.

Thus, this one time shift in the reporting cycle will have long-term benefits for the MS4 program.

B. Contact Information

Agency Name: University of Maryland-College Park Campus
Contact Person and Title: Stephen Reid, Environmental Planner
Mailing Address: 7757 Baltimore Ave., Service Building, Room 1400B, College Park, MD 20742
Phone Number: (301) 405-6910
Email: sreid@umd.edu

C. UMD NPDES MS4 Organizational Structure

UMD Facilities Management-Facilities Planning (FM-FP) managed and administered the NPDES MS4 permit during the reporting period. Several units/departments helped implement

MS4 permit requirements; however, the following units/departments were instrumental in implementing the BMPs within the six MCMs:

- Department of Environmental Safety, Sustainability & Risk (DESSR)—Environmental Affairs
- Facilities Management—Department of Building & Landscape Management (FM-BLM)
- Facilities Management—Department of Design & Construction (FM-D&C)
- Facilities Management—Department of Engineering & Energy (FM-E&E)
- DESSR—Office of Sustainability (OS)

D. Financial Analysis/Budget Impact

Compliance with the NPDES MS4 program requires significant funding, which is provided through both operational and capital budgets. The MS4 requirements are largely implemented by UMD staff that are either fully or partially dedicated to this effort. The following departments dedicate staff to this program as follows:

- DESSR: Four employees share MS4/stormwater responsibilities and spend the amount of time equivalent to 1.2 full-time staff members.
- FM-BLM: One full-time staff inspects and maintains stormwater facilities, and several other staff dedicate time to public outreach and volunteer events, forest/tree management, and landscape maintenance.
- FM-FP: One full-time staff dedicates at least 50 percent of the time to MS4 permit and stormwater regulations. In addition, several other staff members are partially dedicated to supporting stormwater inventory and geographic information system (GIS) efforts.
- FM-D&C: One full-time staff dedicates 25 percent of the time reviewing stormwater management designs and stormwater compliance.
- FM-E&E: Two full-time staff members dedicate at least 20 percent of the time to engineering and water-related issues.

In addition to labor costs, UMD has spent over $250,000 on expenses directly related to implementing the MS4 permit during the reporting period. Refer to Attachment A for details on expenditures during the reporting period. Looking forward, UMD expects to increase spending on this program. Funds have already been set aside to develop a GIS-referenced utility asset inventory ($500,000) and update the stormwater management facilities database ($35,000).

III. IMPLEMENTATION OF THE SIX MINIMUM CONTROL MEASURES

This section presents progress made on each of the six MCMs during the reporting period (January 1, 2016 thru June 30, 2017). BMPs selected for each MCM are included, and measurable progress towards implementing each BMP is documented. In addition, future steps to better implement each MCM are discussed.

A. Personnel Education and Outreach

UMD is first and foremost an academic and research institution. As such, the over 50,000 students, faculty, and staff that come to campus every day have the opportunity to get involved in dozens of departments, classes, groups, and activities related to water resources. It would be impossible to accurately track all these activities and, therefore, progress for this MCM is likely to be significantly underreported. The general discussion provided below summarizes how UMD is implementing this BMP. Refer to Table 1 for specific BMPs and measurable progress.

The overarching BMP for this MCM is to educate as many students, faculty, and staff as possible about the impacts of stormwater. In addition, it is important for everyone to know what they can do to reduce the impacts of stormwater as well as what UMD is doing to address these concerns.

UMD Staff Giving a Tour of Recently Constructed Rain Gardens

UMD students can select from over 30 major, minor, and graduate degree programs that focus on environmental issues, including water resources. In addition, there are approximately 50 courses that over three thousand students take every year that introduce these topics to the student population. FM personnel regularly work with several professors to provide materials and even in-classroom presentations. In fact, FM and DESSR staff have personally reached well over 2,000 students. Faculty and staff also collaborate on student research projects to promote stormwater awareness. For example, staff worked with a landscape architecture class on the national 2016 USEPA Campus RainWorks Challenge, which challenges students to address real-world problems on the campus. The 2016 UMD won second place in this national competition.

In 2014, UMD created the Sustainable Water Use and Watershed Workgroup to address water-related issues, including stormwater runoff and the MS4 permit. The workgroup consists of technical staff and senior managers, and meetings were held throughout the reporting period to address important issues related to water resources and how each unit can make improvements. These recommendations have been summarized in annual reports, presented to UMD administration, and the reports are made available to the public via the Office of Sustainability website.

DESSR-Environmental Affairs works with the campus community on proper material handling and disposal. In addition, they are responsible for emergency spill response and provide information on helping campus departments order and maintain spill kits. They have developed an "Emergency Response Guide" that is available on their website (https://essr.umd.edu/emergency-response-guide) and provide training to UMD staff in classroom settings as well as online.

Table 1 below provides specific BMPs that UMD continually works toward implementing, as well as progress made in 2016.

Table 1. Personnel Education and Outreach BMP Implementation Table

BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Train staff and faculty on material handling and spill prevention, control and countermeasures	Ongoing	Train staff and faculty on material handling and spill prevention, control and countermeasures: 100 people were trained in classroom and an additional 204 people took the DESSR online training	DESSR
Train staff, students, and other employees in the proper handling and disposal of hazardous and universal waste	Ongoing	A total of 2,296 people took online training related to proper handling and disposal of waste products	DESSR
Provide stormwater information on the UMD website	Ongoing	UMD provides information on stormwater via several websites, including: www.sustainability.umd.edu/campus/water www.des.umd.edu/compliance/factsheet/stormwater.html www.facilities.umd.edu/arboretum	OS, DESSR, FM

BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Work with student interns on stormwater management facilities and education	Ongoing	FM-BLM worked with seven student interns	FM-BLM
Participate in Arbor Day	Annually in April	UMD holds an annual Arbor Day event which includes a ceremonial tree planting. In 2016 and 2017, this event attracted over 100 people.	FM-BLM

Future Progress: UMD will work towards setting up a stormwater reporting hotline that people can report illicit discharges and other water-related observations. Existing websites continue to be updated with the most current information, and staff continue with outreach efforts.

B. Public Involvement and Participation

UMD offers many opportunities for public involvement and participation related to stormwater activities. While public involvement is often in the form of UMD student and faculty volunteerism, staff also work with our local and regional neighbors on a variety of environmental and stormwater issues. Due to the number of student groups and public events held on campus it is likely that progress for this MCM is significantly underreported. Table 2 presents specific BMPs and progress made during the reporting period.

Under the Public Involvement and Participation MCM, UMD implemented several BMPs in the areas of: streamside tree plantings and invasive removal events, campus trash cleanups, volunteer stormwater BMP events, and coordinating with local and regional watershed groups.

The UMD Department of Facilities Management-Building & Landscape Management (BLM) has a full-time Volunteer Coordinator on staff. This staff person works to get individuals and groups involved in various environmental and landscape volunteer events. During the reporting period, staff in BLM were successful in coordinating over 7,300 volunteer hours, including events to weed stormwater BMPs and improve riparian buffers. These events are opportune times to talk about the importance of stormwater management and hand out information/brochures. The Rain Garden brochure that was handed out is included as Attachment B. UMD handed out several hundred brochures during the reporting period, not including brochures and other information that was printed from the website.

UMD also offers the campus community the opportunity to learn about sustainable agriculture and purchasing locally sourced foods. During the summer months, UMD hosts a farmer's market every Wednesday in the heart of the campus. Only local vendors (less than 250 miles from campus) who use sustainable farming practices can participate, which preserves and protects our water resources. In addition, students can get involved in growing produce that is used in campus dining halls. There are several small gardens throughout campus; however, the two major gardens are the Community Learning Garden and Terp Farm. The Community Learning Garden is located on campus and is managed by the Garden Club in conjunction with a faculty-advisor. It is irrigated using a rainwater cistern and was recently expanded using Envirobloxx™ to reduce slope erosion and allow the slope to be planted with more vegetables. Terp Farm is located 15 miles from the main campus and managed by the Department of Dining Services. They also use sustainable farming practices and grow produce that is used in dining halls and donated to local food banks. Students help manage both of these farms.

Rain Garden Planting Volunteer Event

Finally, UMD is engaged with our local and regional stormwater partners. UMD is a member of the Baltimore-Washington Partners for Forest Stewardship (BWPFS) and Anacostia Watershed Restoration Partnership (AWRP), and works with local watershed groups like Anacostia Watershed Society (AWS) and the Metropolitan Washington Council of Governments (COG). These valuable partnerships encourage collaboration and communication within the local MS4 community, and can create opportunities to seek grants and/or coordinate watershed restoration activities. For example, UMD partnered with AWS to apply for a Chesapeake Bay Trust (CBT) Fund grant to retrofit a parking lot and conduct volunteer outreach events. Two rain gardens and one bioretention facility were constructed during the reporting period to provide treatment for most of the stormwater that runs off the parking lot. After the major construction was completed, several student events were held to engage the campus community in the initial planting and subsequent maintenance of these facilities.

Table 2. Public Involvement and Participation BMP Implementation Table

BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Participate in Good Neighbor Day	Annually in April	Coordinated with community members to conduct an environmental activity. In 2016, approximately 775 people participated in various activities, including over 250 people on the UMD campus.	Office of Community Engagement, FM
Participate in Maryland Day	Annually in April	Approximately 78,000 people came to UMD on Maryland Day. FM, Office of Sustainability, and other campus groups provided information on sustainability efforts and reducing the campus' environmental impacts.	OS, FM departments, student groups
Campus trash cleanups	Ongoing	At least six trash cleanups (often focused around streams) were conducted that engaged over 130 students. In one of these events, at least 30 bags of trash were collected.	FM
Participate in local watershed groups and coordinate with regional partners	Ongoing	UMD participated in several watershed group meetings including BWPFS and AWRP, as well coordinated with local partners including AWS and COG. UMD partnered with AWS to apply for a CBT grant to retrofit the golf course parking lot.	FM
Engaging individuals and groups in volunteer events	Ongoing	There over 7,300 volunteer hours from over 2,000 volunteers that worked on a variety of projects including weeding, trash pickup, and planting.	BLM
UMD Farmer's Market	March through November	Every Wednesday local farmers sell sustainably-grown produce, meat, and other products. Currently, eight vendors from Maryland sell their products to hundreds of customers.	Dining Services
Terp Farm	Ongoing	Terp Farm produced 29,671 pounds of produce with the help of 2,071 people in 2016. It also had 19 academic course partners.	Dining Services, College of Agriculture and Natural Resources, OS

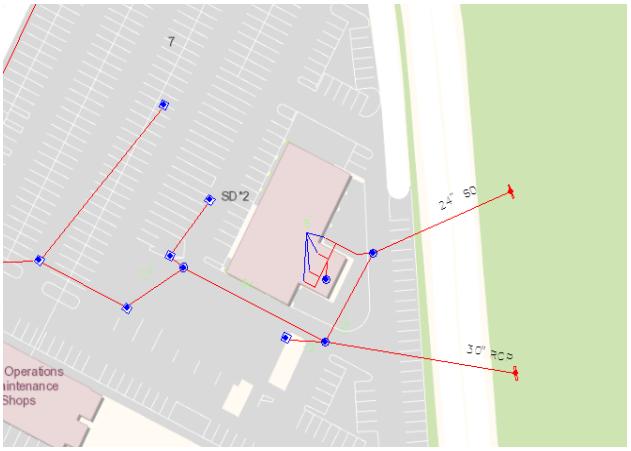
BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Community Learning Garden	Ongoing	Over 80 volunteers a month learn how to sustainably grow vegetables and about stormwater management and landscape design and maintenance. In addition, the Community Learning Garden is used as an instructional space for several classes and for tours and workshops by local clubs.	Institute of Applied Agriculture

Future Progress: There continues to be a very high rate of public participation and involvement at UMD. UMD will evaluate this program and determine any additional efforts required to comply with the forthcoming MS4 permit.

C. Illicit Discharge Detection and Elimination (IDDE)

The goal of a comprehensive IDDE program is to identify unregulated discharges going through the storm drain system. The main components of an IDDE program are an accurate storm drain map/inventory and regular inspections, and procedures to eliminate illicit discharges. Proper disposal of hazardous waste and stringent spill cleanup procedures is also important parts of the IDDE program. Table 3 presents specific BMPs and measurable progress during the reporting period.

UMD maintains the storm drain map in computer-aided design (CAD) files (a copy of the inventory is provided as Attachment C). These maps provide locational information including locations of inlets, manholes, and outfalls, and they are updated with storm drain information as construction projects are completed or when other information becomes available. In light of forthcoming MS4 retrofit requirements and as part of a larger utility asset management effort, UMD is revamping the storm drain asset inventory. During the reporting period, UMD contracted with Maryland Environmental Service (MES) to provide



Example of the UMD storm drain inventory

consulting services to transfer the CAD files into a fully referenced GIS database. UMD will also be conducting field work to survey (horizontal and vertical) structures and to add any structures that may be missing. Storm drain networks will also be created so that illicit discharges can be better tracked to potential sources. During the reporting period, UMD worked with MES to develop the attribute information for the database, transferred information for the storm drain system from CAD into GIS, and began attributing the database with any available information. The database structure is included as Attachment D. Field work associated with inventorying and surveying will begin in late 2017.

UMD also has an NPDES Discharge permit (Permit Number 08-DP-2618) for industrial discharges primarily associated with non-contact cooling water, boiler blowdown, and condensate water through the storm drain system to 13 regulated outfalls on campus. Please note that UMD has submitted an application to MDE to renew this permit and has received a tentative determination (Permit Number 17-DP-2618), and will likely receive authorization in the coming months. As part of this permit, the 13 outfalls are inspected on a monthly basis, water quality samples are collected, and each outfall is inspected for the presence of illicit discharges (i.e., discharges other than those approved discharged listed above). During one sampling event, nitrogen was detected at a high concentration. Efforts were made to identify if this was associated with recent fertilizer applications (it was not) or other potential sources. Subsequent sampling did not confirm high nitrogen concentrations and therefore this was considered to be an anomaly. During another event, an oil sheen was observed. DESSR traced this sheen to a minor oil spill at an upgradient parking lot and suspect this to be the source.

Most notably, UMD developed and implemented a comprehensive IDDE Plan that includes: a written standard operating procedure (SOP) for field screening, frequency of inspections, and methods for identifying the source of suspected illicit discharges. The SOP was developed over the course of several months and was finalized on July 27, 2017, just after the reporting period for this annual report. The SOP is included as Attachment E. After completion of the SOP, UMD conducted an outfall screening exercise in which 46 outfalls were inspected in October 2017. This equates to approximately 66 percent of the 70 outfalls that are currently mapped in the inventory—significantly more than the anticipated requirement of 50 percent in the forthcoming MS4 permit. Illicit discharges identified were mostly associated with construction sites and dining halls. Corrective actions were taken to reduce/eliminate these discharges, and over 2,600 linear feet of storm drain infrastructure, including all associated inlets and outfalls, were cleaned. The report is included as Attachment F.

During the reporting period, UMD implemented a more robust IDDE tracking system to better respond to any identified illicit discharges, especially associated with construction projects. From January 1, 2016 thru June 30, 2017, eight discharges associated with construction projects were observed. DESSR immediately contacted appropriate personnel to take necessary action and instruct the contractor to eliminate the illicit discharge.

Finally, DESSR is responsible for handling disposal of all hazardous waste on campus. Not only is all hazardous waste closely tracked and accounted for, an MDE-permitted and secured facility is used to store and transfer hazardous waste for proper disposal. In addition, DESSR ensures spill cleanup kits are installed at appropriate locations and provides training on hazardous waste and oil handling and spill prevention and cleanup. These efforts are supplemented by DESSR's Office of Research Safety that provides continuous training, inspection and consultation to laboratory personnel concerning the proper management of hazardous materials.

Table 3. Illicit Discharge Detection and Elimination BMP Implementation Table

BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Update and improve storm drain inventory	2016-2018	Develop database schema for storm drain inventory. Converted CAD files into GIS and began attributing data. MES will begin field survey in late 2017.	FM
Continue outfall monitoring as part of industrial discharge permit	Ongoing	All 13 outfalls listed in the NPDES Discharge Permit (Permit Number 08-DP-2618) were inspected monthly and several illicit discharges were identified and eliminated through this program.	DESSR
Developed and implemented IDDE Plan	Feb-July 2017	UMD developed an IDDE Plan. The plan was finalized in July 2017 and implemented.	DESSR
Outfall screening	Oct 2017	UMD conducted a screening event to screen approximately 66 percent of all the outfalls on campus.	DESSR

Future Progress: UMD will continue to implement the IDDE Plan, focusing efforts on potential hotspots including dining halls, fueling areas, maintenance areas, and other industrial use sites. Field work for the Utility Asset Inventory will begin in late 2017.

D. Construction Site Stormwater Runoff Control

UMD complies with all applicable MDE construction site stormwater runoff requirements. This includes obtaining Erosion & Sediment Control (E&SC) permits for all projects with limits of disturbance greater than 5,000 square feet and NPDES Permits for Construction Activities on projects greater than one acre. All E&SC devices are designed and installed in accordance with the latest MDE E&SC standards and specifications.

MDE inspects and enforces the E&SC plan throughout the construction process; however, UMD also has several construction inspectors that regularly visit construction sites. These inspectors have the authority to make the contractor implement corrective actions if any E&SC are deemed to be insufficient or failing. In addition, UMD implemented a more robust IDDE tracking system to better respond to any identified illicit discharges, especially associated with construction projects (see Section III(C) above).

Table 4 below shows specific projects that received required E&SC permits, projects that began or continued to be under construction in 2016, as well as the number of staff that received specialized E&SC training.

Table 4. Construction Site Stormwater Runoff Control Implementation Table

BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Develop and enforce erosion and sediment control plans	Ongoing	All projects over 5,000 square feet or moving greater than 100 cubic yards of soil are required to develop E&SC plans that are approved by MDE. UMD staff and MDE personnel inspect and enforce adherence to these plans. Between January 1, 2016 and June 30, 2017 the following projects received approval: Brendan Iribe Center for Computer Science and Innovation, the New Cole Fieldhouse – Phase 1, McKeldin Mall Infrastructure Improvements – Phase 1 and Phase 2, Lot GG parking renovation, Lot H Cooling Tower. Between January 1, 2016 and June 30, 2017 the following projects were completed: Shipley Field Renovation, Lot GG parking renovation, Edward St. John Learning and Teaching Center, McKeldin Mall Infrastructure Improvements – Phase 1. Projects continuing construction: A. James Clark Hall, Brendan Iribe Center for Computer Science and Innovation, the New Cole Fieldhouse, McKeldin Mall Infrastructure Improvements – Phase 2.	FM-D&C
MDE E&SC Training Course ("Green Card")	Ongoing	UMD continues to encourage appropriate staff to get additional training in E&SC techniques, including getting certified as an MDE "Responsible Person". In 2016 and 2017, 17 UMD staff in D&C had completed this training.	FM-D&C

Future Progress: UMD will continue to comply with all MDE erosion and sediment control requirements for construction sites.

E. Post Construction Stormwater Management

Post construction stormwater management includes providing stormwater management for new construction projects as well as redevelopment projects, and ensuring that all stormwater BMPs are properly maintained in order to achieve maximum stormwater treatment. In addition, UMD personnel look for opportunities to retrofit existing impervious areas with stormwater management wherever possible. Table 5 presents specific BMPs and measurable progress.

During the design of new construction projects and redevelopment projects, UMD complies with all MDE stormwater management regulations. This includes providing Environmental Site Design (ESD) stormwater management facilities to the maximum extent practicable (MEP) for all projects, and incorporating other stormwater BMPs as needed. During the reporting period the Edward St. John Learning and Teaching Center green roof and Lot GG bioretention facilities were completed. These projects incorporated required stormwater management facilities and the design plans were reviewed and approved by MDE.

Stormwater from a parking lot ponding in a newly built bioretention facility

A robust stormwater management maintenance program is necessary to ensure these facilities are operating at peak performance. UMD continued to make progress in this area during the reporting period. FM-BLM is responsible for inspection and maintenance of all 110 stormwater BMPs. One full-time staff member is dedicated to managing this program; however, several staff members from other departments (e.g., DESSR, Facilities Planning) assist. Staff and student volunteers (see Table 2 above) are able to perform a significant amount of maintenance; however, it was necessary to supplement this work with contractors. UMD dedicated funds (see Appendix A) to hire a maintenance contractor to assist with needed repairs.

UMD follows MDE procedural guidance for performing inspections, including inspection intervals and checklists. The UMD stormwater management inspection program is provided as Attachment G. During the reporting period, several new facilities were built, bringing the total number of facilities to 119. All these BMPs were visually inspected per the inspection program, and many of them were maintained as part of routine UMD landscape management or were part of volunteer maintenance projects. Thirty two facilities required more thorough inspection and

maintenance, which required the services of a contractor. Maintenance activities performed on these 32 facilities can be found in Attachment H. These facilities were prioritized based on scope of maintenance, technical complexity, and available funding.

During the reporting period, staff made progress towards utilizing GIS technologies to digitize the inspection program. The goal of this effort is to eliminate paperwork and improve how maintenance records are stored and maintained. When completed, field personnel will be able to use network-connected tablets to have access to facility information including record drawings and past inspection results. Results from inspections results will be instantaneously recorded in the maintenance database. However, having an accurate stormwater BMP database is necessary prior to digitizing the inspection forms, and thus this effort will resume shortly after the stormwater BMP database has been finalized.

Progress was also made on the GIS-based stormwater BMP asset inventory (see Attachment I). During the reporting period, UMD began reviewing the proposed Urban BMP Database structure (Table B.1 in the draft MS4 permit that released by MDE in December 2016). UMD began evaluating the existing BMP database to: evaluate the facilities in the database for conformance with MDE's design regulations; determine what information is needed in order to comply with the proposed regulation; and identify retrofit opportunities to improve stormwater treatment and maximize stormwater credits. Most of this work was done in late 2017 and will be reported in more detail in future annual reports.

In addition to building stormwater management facilities as a part of construction projects, UMD also seeks out opportunities to retrofit existing impervious areas that have little or no stormwater management. For example, UMD partnered with AWS to apply for and received a CBT grant to retrofit a parking lot. Two rain gardens and one bioretention facility were constructed during the reporting period to provide treatment for most of the stormwater that runs off the parking lot. Also, UMD redesigned bike parking pads to utilize permeable pavers to allow for stormwater treatment. At least 10 of these "new standard" bike parking pads have been built during the reporting period as bike parking pads need maintenance and replacement.

Staff Building a Pervious Paver Bike Parking Pad

To further this effort, the UM Sustainability Fund provides funds to students, faculty and staff to implement projects that promote environmental sustainability. The Sustainability Fund is funded by student fees and it is administered through a student-majority subcommittee of the University Sustainability Council. For the 2016 funding cycling, the Sustainability Fund awarded approximately $400,000 in grants for sustainable projects, including money to support a bioswale, rooftop garden, organic landscape practices, and a living wall. Additionally, the new

Student Facilities Fund (2017) is another vehicle for students to propose and implement campus environmental projects.

Table 5. Post Construction Stormwater Management Implementation Table

BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Construction stormwater management facilities as part of new construction projects	Ongoing	The Edward St. John Learning and Teaching Center green roofs and Lot GG bioretention facilities were completed. The A. James Clark Hall SWM facilities continued construction.	FM-D&C
Inspect and maintain existing stormwater management facilities	Ongoing	All 119 facilities were visually inspected and maintained as needed. UMD hired a contractor to perform significant maintenance on 32 facilities.	FM-BLM
Maintain and update stormwater management asset inventory	Ongoing	The BMP asset inventory was improved and additional attributes were added to be more consistent with MDE reporting requirements.	FM-FP
Pervious bike parking pads	Ongoing	At least 10 pervious bike parking pads have been installed as old bike parking pads are replaced.	FM-FP

Future Progress: UMD will continue to comply with all MDE stormwater management regulations for construction projects. The inspection and maintenance program continues to evolve and improve. UMD is in the process of evaluating all stormwater management facilities to determine forthcoming MS4 permit retrofit requirements.

F. Pollution Prevention and Good Housekeeping

UMD is required to implement and maintain pollution prevention and good housekeeping practices to reduce pollution from all operations. During the reporting period, progress was made towards reducing pollution and ensuring UMD has appropriate coverage under various State and Federal water pollution control programs. Table 6 presents specific BMPs and measurable progress.

As mentioned in Section III(C) above, UMD has an NPDES Discharge permit (Permit Number 08-DP-2618) for industrial discharges primarily associated with non-contact cooling water, boiler blowdown, and condensate water through the storm drain system to 13 regulated outfalls on campus. The permit includes a discharge limit for copper. Over the last several years, UMD staff have conducted an extensive investigation to identify the specific sources of copper in the water being discharged, with the goal of mitigating those permitted discharges. While copper is routinely detected in most of the regulated outfalls, three outfalls have been identified as the main sources of copper in the water discharged by the University — Outfall #019, Outfall #005, and Outfall #002. The University has a number of projects underway, or planned in the near future to address copper discharges within those outfalls.

Outfall #019 was identified as the largest source of copper discharges on the campus. Specifically, the copper identified at Outfall #019 was traced back to the PoolPak systems that are utilized in the pools located in the Eppley Recreation Center. The PoolPak system is operated to reduce humidity within the building that results from the swimming pool. The former PoolPak units were removed and new low-copper units were installed in the summer of 2017. Subsequent to the installation of the new units, the condensate lines from the new units will be redirected from the storm drain system to the sanitary sewer system. This project is planned for 2018.

Outfall #005 was identified as the second largest contributor of copper to the University's storm drain discharge. Within Outfall #005, five buildings with cooling towers were identified as the primary source of copper discharges to the outfall. These five buildings are: Jimenez Hall, Main Administration Building, Marie Mount Hall, McKeldin Library, and H.J. Patterson. Condensate discharge from Jimenez Hall has already been eliminated as part of a renovation project in the summer of 2016. Projects are planned to eliminate condensate discharge for several other buildings and work is projected to be completed over the next four years.

Finally, Outfall #002 was also identified as a significant contributor of copper to the University's storm drain discharge. Within Outfall #002, the Clarence Mitchell Building cooling towers were identified as the primary source of Copper discharges to the outfall. Designs are currently underway to redirect the cooling tower blow-down and condensate from the storm drain system to the sanitary sewer. The Clarence Mitchell Building construction is projected for 2018.

During the reporting period, several other measures were taken to reduce the potential for pollution from entering the storm drain system, including street sweeping, maintaining healthy tree canopies, and reducing pesticide applications. UMD actively manages and maintains tree/forest health and seeks opportunities to plant more trees. All trees and forests are managed

Newly Planted Trees by the University House

in accordance with the "Campus Tree Management Plan" (Attachment J) by the UMD campus arborist and over 1,600 trees were planted during the reporting period. Finally, sound IPM practices are used to reduce the need for pesticide applications. UMD has 15 certified pesticide applicators and an IPM scout to ensure pesticides are used only when necessary. Unfortunately, staff turnover has caused a reduction in the amount and frequency that streets and parking lots are swept. While UMD vacancies remain unfilled, UMD is hiring a contractor to sweep 20 line-miles of roads and 15 acres of parking lots quarterly. UMD hopes to fill this position in order to continue the more robust street sweeping program that was implemented prior to these vacancies. UMD maintains, under the Clean Water Act, a Spill Prevention Control and Countermeasure Plan (SPCC Plan) that governs the storage of all bulk oil storage locations oil having over 55 gallons of capacity. The inspections are conducted monthly by UMD's Environmental Affairs staff to identify leaks, cracks or other conditions that may create a potential release. Further, DESSR conducts annual training for those involved in oil transfer activities and routinely updates the SPCC Plan as storage facilities are added or removed.

Finally, UMD worked to ensure that it has coverage under all relevant NPDES programs. As discussed in Section III(C) above, UMD submitted an application to MDE to renew our NPDES Discharge Permit (Permit Number 08-DP-2618) for industrial discharges primarily associated with non-contact cooling water, boiler blowdown, and condensate water through the storm drain system to 13 regulated outfalls on campus. MDE has provided a tentative determination (Permit Number 17-DP-2618), and UMD will likely receive authorization in the coming months. In addition, UMD applied for coverage under the NPDES permit for general stormwater discharges associated with industrial activities (Discharge Permit No. 12-SW). As part of the application, UMD prepared a Stormwater Pollution Prevention Plan (SWPPP) for six facilities that require coverage: Environmental Services Building; Building & Landscape Maintenance Facility; Shuttle Bus Facility; Art-Sociology Building Smelter; Severn Building; Combined Heat & Power Facility. The SWPPP has been implemented and is included as Attachment K. MDE reviewed all provided information and authorized coverage under the 12-SW permit in a Letter of Authorization dated September 8, 2017.

Table 6. Pollution Prevention and Good Housekeeping Implementation Table

BMP Selected	Schedule/ Date	Reporting Period Measurable Progress	Responsible Entity
Ensure proper handling and disposal of hazardous waste	Ongoing	DESSR collects approximately 10,000 containers of hazardous waste each year and manages an MDE-permitted hazardous waste storage facility.	DESSR
Pesticide applications	Ongoing	Pesticide applicators must maintain MDE certifications. UMD has 15 certified pesticide applicators, and another 15 registered applicators who work under the direct supervision of a certified pesticide applicator. In addition, UMD uses the principles of Integrated Pest Management (IPM) to reduce pesticide use, including employing an "IPM Scout" to determine pest pressures and appropriate actions prior to applying pesticides.	FM-BLM
12-SW Permit for Discharges from Industrial Facilities	2017	Received MDE authorization for coverage under 12SW3281 on September 8, 2017.	DESSR
Street sweeping	Every two weeks	Swept approximately 20 miles of roads and 15 acres of parking lots quarterly.	FM-BLM
Tree/Forest management	Ongoing	UMD began the five year review process of updating the "Campus Tree Management Plan".	FM-BLM
Tree planting and NNI removal	Ongoing	Over 125 trees were planted, mostly within stream buffers. NNIs were removed from four different stands of trees.	FM-BLM

Future Progress: UMD will continue to implement the 12-SW permit to reduce discharges from industrial facilities. UMD has received a tentative determination for renewing the NPDES Discharge permit (Permit Number 08-DP-2618), and anticipates a final determination in the coming months. Progress will continue to be made on tree plantings, street sweeping, and other pollution prevention measures.

Attachment A. Financial Analysis of MS4 Program

Department	Category/Description	Expenditures	Time Period
DESSR	IDDE/Industrial Permit—Stormwater sampling, outfall inspection, and reporting	$33,603	FY17
DESSR	12-SW—SWPPP updating & implementation; quarterly inspections and stormwater sampling; corrective action development	$10,545	FY17
DESSR	IDDE—Prepare & update IDDE Plan; inspect and test outfalls; implement corrective actions.	$20,535	FY17
DESSR	Prepare Annual MS4 Report	$4,807	FY17
DESSR	Outreach to other departments and campus community; participation in stormwater-related committees & meetings	$12,500	FY17
DESSR	Conduct SPCC inspections, SPCC Plan updates, & Oil Operations Permit Compliance activities	$40,359	FY17
FP	Utility Asset Inventory	$30,289	Jan 1, 2016 – June 30, 2017
BLM	Maintenance of Stormwater Managements BMPs	$115,432	Jan 1, 2016 – June 30, 2017
	TOTAL	$268,070	

Attachment B-Rain Garden Brochure (folded in quarter)

The University of Maryland, the state's flagship campus, is located in the Baltimore-Washington corridor. The American Association of Public Gardens, by designating the university as an arboretum and botanical garden in 2008, recognized President C. D. Mote, Jr.'s commitment to becoming a green campus. Maryland is also the first university in the state to be honored as a Tree Campus USA by the Arbor Day Foundation.

The campus inventory of 6,500 trees, garden plantings and nearly 400 acres of undeveloped urban forest is a beautiful reminder of Maryland's history and a harbinger of Maryland's future. The university looks at the campus' green space as a major resource for its educational, research and service missions.

A research rain garden drains parking area 11b where Campus Creek enters the Paint Branch

Would you like to help?

We invite you to visit us often, learn of our plans and join our efforts to become a first-class arboretum and botanical garden.

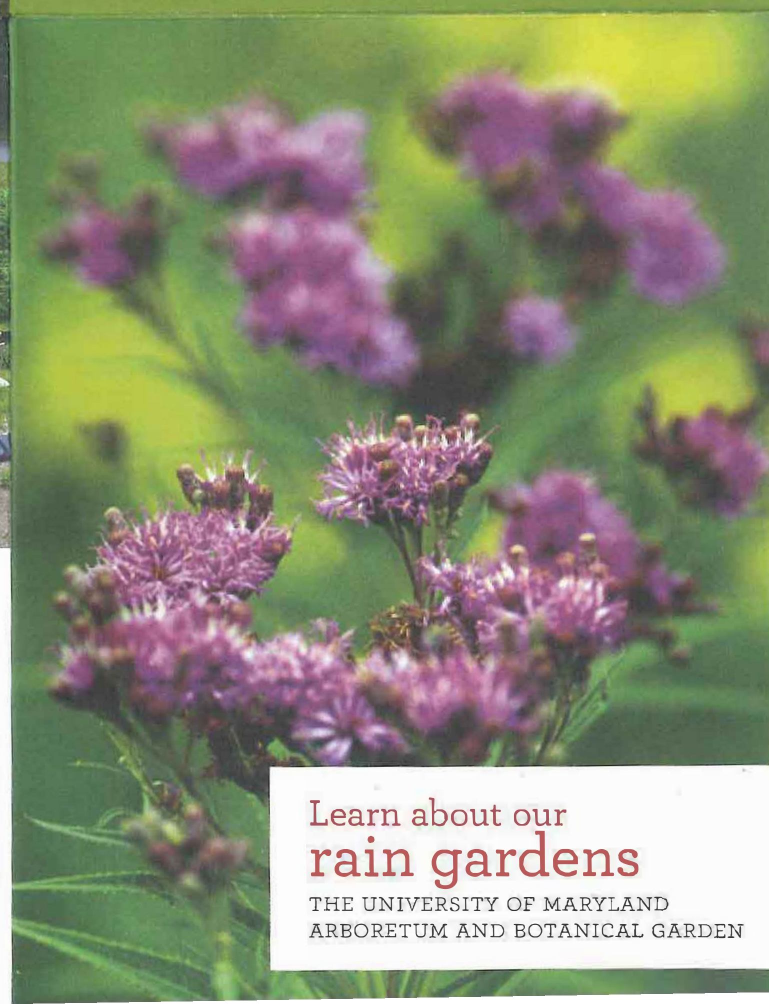
To learn more about the many ways in which you can contribute to this major initiative, please visit our Web site at www.arboretum.umd.edu or e-mail arboretum@fm.umd.edu

UNIVERSITY OF MARYLAND

ARBORETUM AND BOTANICAL GARDEN

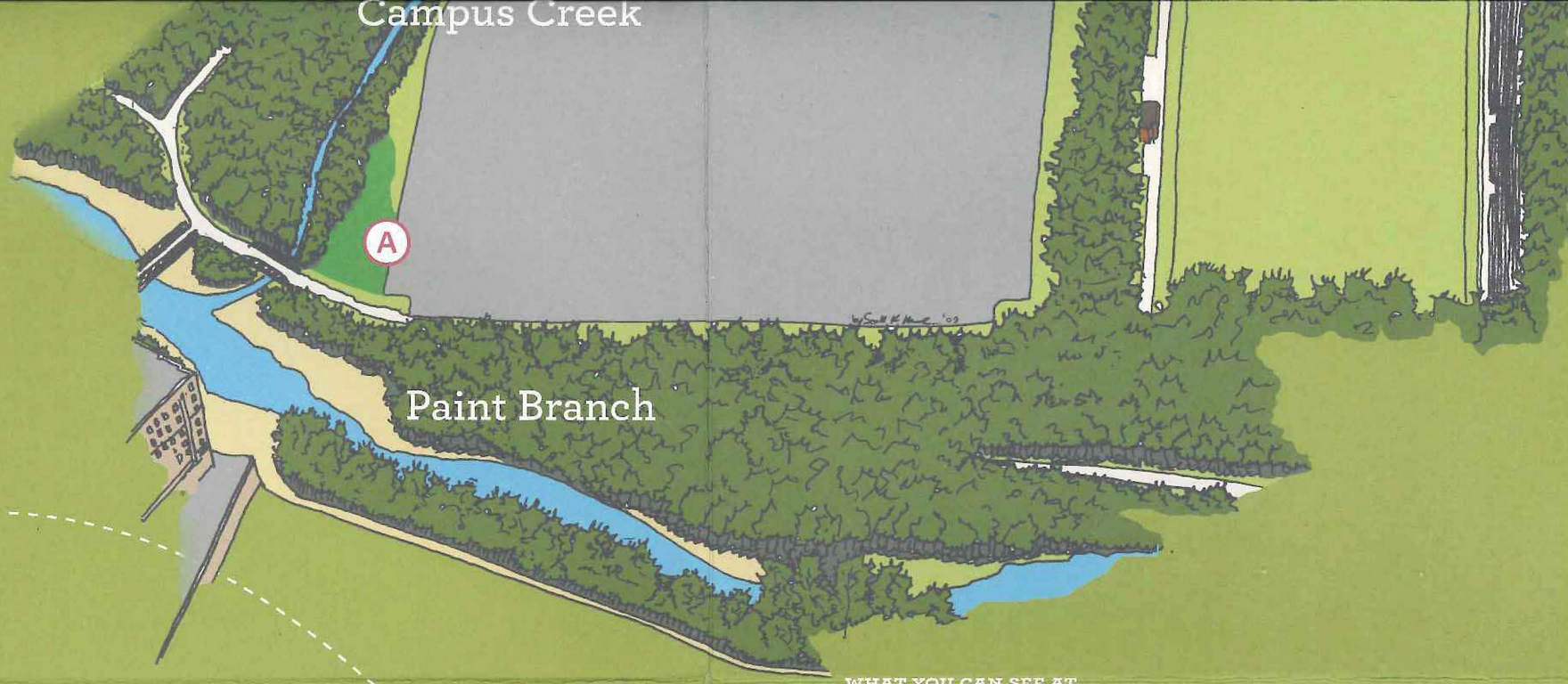
Facilities Management
Service Building #003
University of Maryland
College Park, MD 20742

www.arboretum.umd.edu
arboretum@fm.umd.edu



Learn about our rain gardens

THE UNIVERSITY OF MARYLAND ARBORETUM AND BOTANICAL GARDEN



WHAT YOU CAN SEE AT THE RAIN GARDENS

Hollow-stem Joe-pye weed
Eupatorium fistulosum

Also called trumpetweed, this perennial can grow to 7 feet tall with tiny, soft pink flowers appearing at the top of the hollow stalks from July to September. It is a magnet for Swallowtail butterflies.

Swamp milkweed
Asclepias incarnata

This perennial can be recognized by its large, pinkish-red flowers that bloom during the summer and through early fall. Blossom clusters attract butterflies and hummingbirds.

Oswego tea (Bee balm)
Monarda didyma

Notable for its scarlet, tubular flower clusters and mint-scented leaves, this plant is also known as red bergamot. The name denotes use of its leaves for tea by the Oswego tribe of New York. It blooms May through October.

Drooping sedge
Carex prasina

An ornamental sedge, this hardy dark-green plant grows in a wide range of soil types. It produces long, droopy brown flowers from July through August.

Winterberry holly
Ilex verticillata

Thrushes, mockingbirds and robins are just a few of the birds attracted t this tall, bright shrub and its glossy red berries. Small white flowers appe in early June. It grows as either a female (fruit-bearing) or male (flowe producing) plant.

Campus Rain Garden Map

- **A** A research rain garden drains parking area 11b where Campus Creek enters Paint Branch
- **B** Paint Branch Drive rain garden
- **C** Bioretention strips located in Comcast Center Lot 9b
- **D** Bioretention swales that parallel Campus Creek
- **E** The rain gardens at Lot PP

Located in northwestern Prince George's County, the campus comprises 1,250 acres of rolling topography in the urban corridor between Baltimore and Washington, D.C. It is also within the Anacostia-Potomac-Chesapeake Bay Watershed.

What Is a Rain Garden?

A rain garden, also called a bioretention cell, is an engineered combination of specially selected plants, soils and mulch designed to collect, retain and cleanse rainwater that runs off impervious surfaces such as parking lots and rooftops. Physical, chemical and biological processes occur on the surface, in the root zone and throughout the soil profile. Shortly after a heavy rain, water stands in these rain gardens for several hours.

Unlike traditional curbs and storm drains that quickly move stormwater off site, new practices, such as rain gardens, slow down stormwater so it can percolate into the soil, naturally filtering pollutants and recharging the groundwater. This is especially beneficial to the health of trees and streams during dry spells.

Bee balm
Monarda didyma

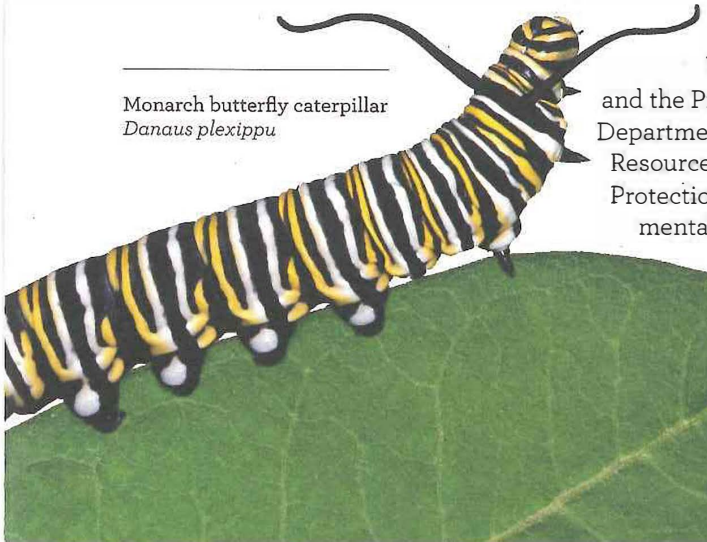
Spicebush
Lindera benzoin

Joe-pye weed
Eupatorium fistulosum

Our Research

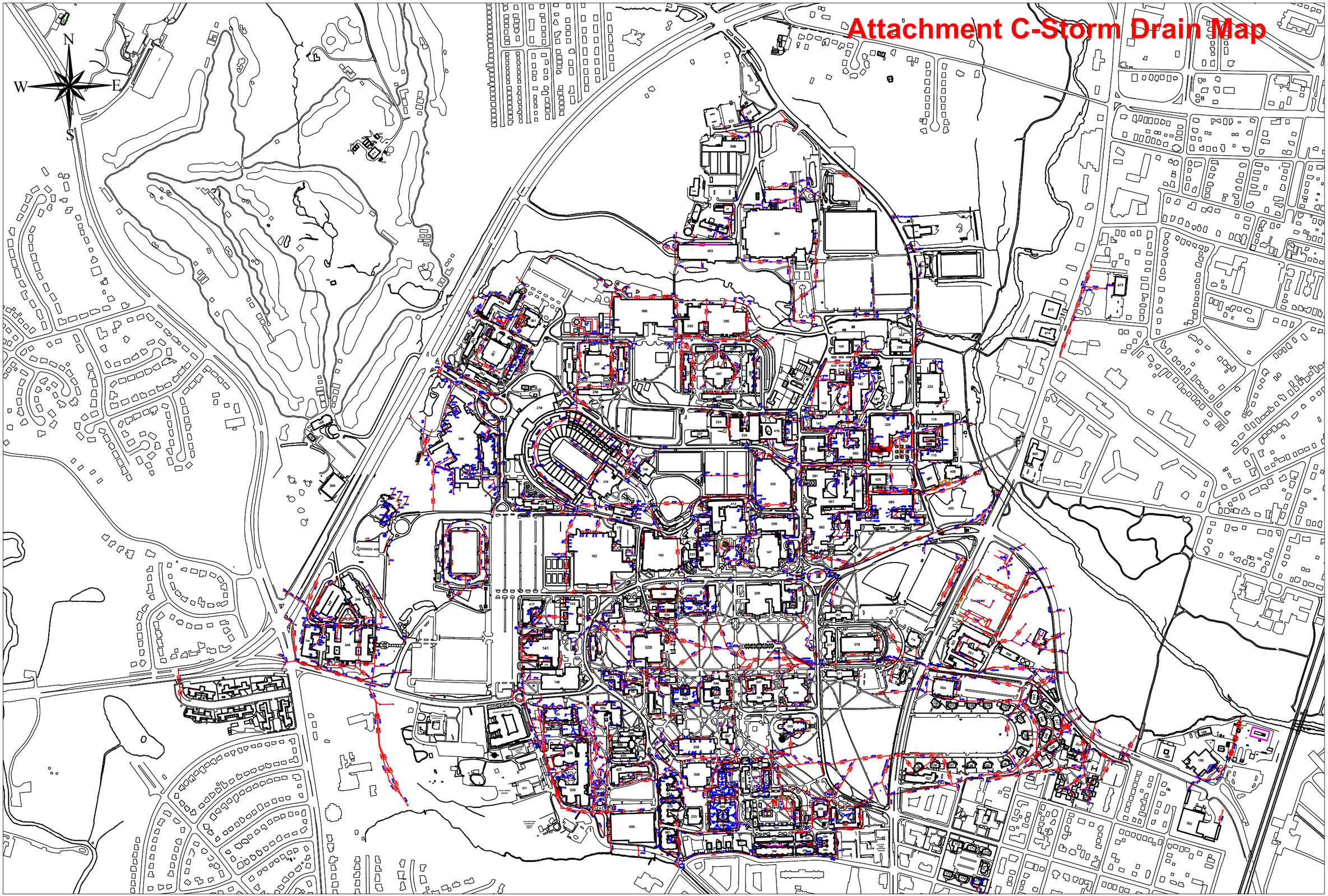
Professor Allen P. Davis, Department of Civil and Environmental Engineering, is conducting research to measure the effectiveness of contaminant removal by rain gardens, focusing on lead, phosphorus, zinc, copper and suspended solids. Several campus rain gardens have concrete channels and automated monitoring stations that measure water flow and pollutants. Each area is lined with plastic to ensure that all stormwater runoff can be measured. The findings of this research are helping us design even more effective small-scale water treatment methods.

Bioretention sites were designed and installed at the campus in 2003 through a partnership with UM Facilities Management and the Prince George's County Department of Environmental Resources under a U.S. Environmental Protection Agency grant for experimental technologies.



Monarch butterfly caterpillar
Danaus plexippu

Attachment C-Storm Drain Map



Attachment D-Utility Asset Inventory Database Structure (Attribute Tables Only)

Sewer Manholes **sSanitaryManhole**

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Comments
ObjectID								
FACILITYID	String	9	Facility ID	Locally assigned Facility Identifier			TRUE	Sample ID (DSM000001)
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase				
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
WSSC_ID	String	**TBD**	WSSC Permit #	WSSC Permit Number				
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
HIGHELEV	Double	8	High Pipe Elevation	High pipe elevation inside manhole			TRUE	
INVERTELEV	Double	8	Invert Elevation	The bottom elevation of the manhole			TRUE	
INVERT	Double	8	Invert	The depth of the manhole			TRUE	
RIMELEV	Double	8	Rim Elevation	The elevation of the manhole rim			TRUE	
CVTYPE	String	50	Cover Type	The type of stormwater manhole cover	piManholeCoverType		TRUE	
WALLMAT	String	25	Wall Material	Wall Material	piPipeMaterial		TRUE	
MHTYPE	String	15	Manhole Type	The type of manhole	piManholeType		TRUE	
CONDITION	String	10	Manhole Condition	The condition of the asset	Condition		TRUE	
LOCDESC	String	200	Location Description	A general description of the location of the manhole			TRUE	
WATERSHED	Text	25	Watershed	Information to document which watershed the infrastructure is in			TRUE	
CREATED_USER	Text	25	Created User	A field to document who created the field/record in GIS			TRUE	
CREATED_DATE	Date		Created Date	A field to document the date the field/record was created			TRUE	
COORDSOURCE	Text	20	Coordinate Source	Field/Record source (e.g., field surveyed, record drawings, etc.)	dCoordSource		TRUE	
FIELDVERIFIED	Text	5	Field Verified	A field to document whether someone has actually verified in person whether the structure actually exists in the location shown	BooleanDomain		TRUE	
CUTDEPTH	Double	8	Pavement Cut Depth	Pavement Cut Depth			TRUE	
FLOWDIR	String	25	Flow Direction	Defines the direction of flow using geometric flow direction values	Direction		TRUE	
LINED	String	3	Lined	Indicates if the manhole is lined	YesNo		TRUE	
GPSDATE	Date	8	GPS Date	Date the feature was located with GPS			TRUE	
ENABLED	SmallInteger	2	Enabled	Enabled	EnabledDomain	1	TRUE	
LIFECYCLESTATUS	Text	20	Life Cycle Status	Indicates the life cycle status of the asset	dLifeCycleStatus		TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE	
SUMFLOW	Double	8	Flow Summary	The sum of flow			TRUE	
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE	
GEN_COMMENTS	Text	255	General Comments	Comments field in put general comments as needed.			TRUE	

Sanitary Sewer Line **sSewerLine**

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
ObjectID								
FACILITYID	String	20	Facility Identifier	Locally assigned Facility Identifier			TRUE	Sample ID (DSL000001)
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase				
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
WSSC_ID	String	**TBD**	WSSC Permit #	WSSC Permit Number				
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
MATERIAL	String	20	Material	Material the asset is manufactured with	piPipeMaterial		TRUE	
DIAMETER	Double	8	Diameter	The diameter of the asset	piPipeDiameter		TRUE	
MAINSHAPE	String	50	Main Shape	The shape of the gravity main	piPipeShape		TRUE	
DESIGNLENGTH	Double		Design Length	Length of the stormwater pipe			TRUE	
WATERSHED	Text	25	Watershed	Information to document which watershed the infrastructure is in			TRUE	
CREATED_USER	Text	25	Created User	A field to document who created the field/record in GIS			TRUE	
CREATED_DATE	Date		Created Date	A field to document the date the field/record was created			TRUE	
COORDSOURCE	Text	20	Coordinate Source	Field/Record source (e.g., field surveyed, record drawings, etc.)	dCoordSource		TRUE	
FIELDVERIFIED	Text	5	Field Verified	A field to document whether someone has actually verified in person whether the structure actually exists in the location shown	BooleanDomain		TRUE	
PIPETYPE	String	50	Pipe Type	The type of stormwater pipe			TRUE	
LINEDYEAR	String	4	Year Lined	Year the pipe was lined			TRUE	
LINERTYPE	String	20	Liner Type	The type of liner	piLiningMethod		TRUE	
DOWNELEV	Double	8	Downstream Elevation	The down stream elevation where the pipe meets the manhole			TRUE	
UPELEV	Double	8	Upstream Elevation	The upstream elevation where the pipe meets the manhole			TRUE	
SLOPE	Double	8	Slope	The slope of the main			TRUE	
TOST	String	11	To Structure	The downstream structure			TRUE	
ENABLED	SmallInteger	2	Enabled	Enabled as part of the network	EnabledDomain	1	TRUE	
LIFECYCLESTATUS	Text	20	Life Cycle Status	Indicates the life cycle status of the asset	dLifeCycleStatus		TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE	
SUMFLOW	Double	8	Flow Summary	The sum of flow			TRUE	
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE	
GEN_COMMENTS	Text	255	General Comments	Comments field in put general comments as needed.			TRUE	
AncillaryRole	SmallInteger	2	AncillaryRole	AncillaryRole (Source or Sink)	AncillaryRoleDomain	0	TRUE	Determines if feature is a source or a sink for flow direction

Storm Drain Line (sdStormDrainLine)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
ObjectID								
FACILITYID	String	9	Facility Identifier	Locally assigned Facility Identifier			TRUE	Sample ID (DSD000001)
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase				
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
MATERIAL	String	20	Material	Material the asset is manufactured with	piPipeMaterial		TRUE	
DIAMETER	Double	8	Diameter	The diameter of the asset	piPipeDiameter		TRUE	
MAINSHAPE	String	50	Main Shape	The shape of the gravity main	piPipeShape		TRUE	
DESIGNLENGTH	Double		Design Length	Length of the stormwater pipe (field verified lengths)			TRUE	
WATERSHED	Text	25	Watershed	Information to document which watershed the infrastructure is in			TRUE	Three 12 digit HUC's: 020700100201, 202, and 203
CREATED_USER	Text	25	Created User	A field to document who created the field/record in GIS			TRUE	
CREATED_DATE	Date		Created Date	A field to document the date the field/record was created			TRUE	
COORDSOURCE	Text	20	Coordinate Source	Field/Record source (e.g., field surveyed, record drawings, etc.)	dCoordSource		TRUE	
FIELDVERIFIED	Text	5	Field Verified	A field to document whether someone has actually verified in person whether the structure actually exists in the location shown	BooleanDomain		TRUE	
LINEDYEAR	String	4	Year Lined	Year the pipe was lined			TRUE	
LINERTYPE	String	20	Liner Type	The type of liner	piLiningMethod		TRUE	
DOWNELEV	Double	8	Downstream Elevation	The down stream elevation where the pipe meets the manhole			TRUE	
UPELEV	Double	8	Upstream Elevation	The upstream elevation where the pipe meets the manhole			TRUE	
SLOPE	Double	8	Slope	The slope of the main			TRUE	
FROMST	String	11	From Structure	The upstream structure			TRUE	
TOST	String	11	To Structure	The downstream structure			TRUE	
ENABLED	SmallInteger	2	Enabled	Enabled as part of the network	EnabledDomain	1	TRUE	
LIFECYCLESTATUS	Text	20	Life Cycle Status	Indicates the life cycle status of the asset	dLifeCycleStatus		TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	dAssetEntity	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	dAssetEntity	1	TRUE	
SUMFLOW	Double	8	Flow Summary	The sum of flow			TRUE	
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE	
GEN_COMMENTS	Text	255	General Comments	Comments field in put general comments as needed.			TRUE	

Storm Drain Inlets (sdInletPoint)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Precision	Scale	Notes
ObjectID										
FACILITYID	String	9	Facility ID	Locally assigned Facility Identifier			TRUE			Sample ID (DIP000001)
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase						
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase						
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE			
INLETTYPE	String	50	Inlet Type	The type of stormwater inlet	piInletTypes		TRUE			
ACCESSDIAM	Double	8	Access Diameter	Access diameter for the inlet	piAccessDiameter		TRUE			
INVERTELEV	Double	8	Invert Elevation	Invert elevation (top of structure)			TRUE			
WATERSHED	Text	25	Watershed	Information to document which watershed the infrastructure is in			TRUE			Three 12 digit HUC's: 020700100201, 202, and 203
CREATED_USER	Text	25	Created User	A field to document who created the field/record in GIS			TRUE			
CREATED_DATE	Date		Created Date	A field to document the date the field/record was created			TRUE			
COORDSOURCE	Text	20	Coordinate Source	Field/Record source (e.g., field surveyed, record drawings, etc.)	dCoordSource		TRUE			
XCOORD	Double		X Coordinates	X Coordinates			TRUE			
YCOORD	Double		Y Coordinates	Y Coordinates			TRUE			
FIELDVERIFIED	Text	5	Field Verified	A field to document whether someone has actually verified in person whether the structure actually exists in the location shown	BooleanDomain		TRUE			
ACCESSMAT	String	20	Access Material	Access material for lid or cover	piPipeMaterial		TRUE			
ACCESSTYPE	String	20	Access Type	Method for accessing the opening	piAccessType	Cover	TRUE			
ENABLED	SmallInteger	2	Enabled	Determines if geometric network should be enabled on feature class	EnabledDomain	1	TRUE			
LIFECYCLESTATUS	Text	20	Life Cycle Status	Indicates the life cycle status of the asset	dLifeCycleStatus		TRUE			
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	dAssetEntity	1	TRUE			
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	dAssetEntity	1	TRUE			
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE			
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE			
GEN_COMMENTS	Text	255	General Comments	Comments field in put general comments as needed.			TRUE			
AncillaryRole	SmallInteger	2	Ancillary Role	AncillaryRole (Source or Sink)	AncillaryRoleDomain	0	TRUE			Determines if feature is a source or a sink for flow direction

Storm Drain Manhole (sdStormDrainManhole)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
ObjectID								
FACILITYID	String	9	Facility Identifier	Locally assigned Facility Identifier			TRUE	Sample ID (DSM000001)
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase				
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
HIGHELEV	Double	8	High Pipe Elevation	High pipe elevation inside manhole			TRUE	
INVERTELEV	Double	8	Invert Elevation	The bottom elevation of the manhole			TRUE	
INVERT	Double	8	Invert	The depth of the manhole			TRUE	
RIMELEV	Double	8	Rim Elevation	The elevation of the manhole rim			TRUE	
CVTYPE	String	50	Cover Type	The type of stormwater manhole cover	piManholeCoverType		TRUE	
WALLMAT	String	25	Wall Material	Wall Material	piPipeMaterial		TRUE	
MHTYPE	String	15	Manhole Type	The type of manhole	piManholeType		TRUE	
CONDITION	String	10	Manhole Condition	The condition of the asset	Condition		TRUE	
LOCDESC	String	200	Location Description	A general description of the location of the manhole			TRUE	
WATERSHED	Text	25	Watershed	Information to document which watershed the infrastructure is in			TRUE	Three 12 digit HUC's: 020700100201, 202, and 203
CREATED_USER	Text	25	Created User	A field to document who created the field/record in GIS			TRUE	
CREATED_DATE	Date		Created Date	A field to document the date the field/record was created			TRUE	
COORDSOURCE	Text	20	Coordinate Source	Field/Record source (e.g., field surveyed, record drawings, etc.)	dCoordSource		TRUE	
FIELDVERIFIED	Text	5	Field Verified	A field to document whether someone has actually verified in person whether the structure actually exists in the location shown	BooleanDomain		TRUE	
CUTDEPTH	Double	8	Pavement Cut Depth	Pavement Cut Depth			TRUE	
FLOWDIR	String	25	Flow Direction	Defines the direction of flow using geometric flow direction values	Direction		TRUE	
LINED	String	3	Lined	Indicates if the manhole is lined	YesNo		TRUE	
GPSDATE	Date	8	GPS Date	Date the feature was located with GPS			TRUE	
ENABLED	SmallInteger	2	Enabled	Enabled	EnabledDomain	1	TRUE	
LIFECYCLESTATUS	Text	20	Life Cycle Status	Indicates the life cycle status of the asset	dLifeCycleStatus		TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	dAssetEntity	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	dAssetEntity	1	TRUE	
SUMFLOW	Double	8	Flow Summary	The sum of flow			TRUE	
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE	
GEN_COMMENTS	Text	255	General Comments	Comments field in put general comments as needed.			TRUE	

Outfal Drainage Area (sdOutfallDrainage)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
MDE_OUTFALL_DRAIN_ID	Text	13		MDE primary ID (Unique table ID)				
MDE_OUTFALL_ID	Text	13		MDE primary ID (Unique table ID) should match MDE_OUTFALL_ID value in Outfall featureclass				
OUTFALL_DRAIN_AREA	Double	15		Drainage area (acres) to outfall; limit to two significant digits				
PERMIT_NUM	Text	11		MDE permit number				
GEN_COMMENTS	Text	255		General comments				

Storm Drain Outfall (sdOutfallPoint)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
ObjectID								
FACILITYID	String	9	Facility Identifier	Locally assigned Facility Identifier			TRUE	Sample ID (DOF000001)
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase				
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
MDE_OUT_ID								
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
PIPESHAPE	Text	15	Pipe Shape	The shape of the stormwater pipe	dPipeShape			
DIAMETER	Double	8	Diameter	The diameter of the asset	piPipeDiameter		TRUE	
XCOORD	Double		X Coordinates	X Coordinates			TRUE	
YCOORD	Double		Y Coordinates	Y Coordinates			TRUE	
OUT_TYPE	Text	15	Outfall Type	Type of outfall (e.g., culvert, headwall, etc.)	dOutfallType		TRUE	
ELEVATION	Double		Outfall Elevation	Elevation of Outfall			TRUE	
OUT_DRAIN	Double	10	Outfall Drainage	Total drainage area (acres) for Outfall			TRUE	
GEN_PERM_NUM	Text	10	General Permit Number	General Discharge Permit Number (use: 13-SF-5500 for municipal permit and 13-SF_5501 for State and federal permit)			TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE	
WATERSHED	Text	25	Watershed	Information to document which watershed the infrastructure is in			TRUE	
CREATED_USER	Text	25	Created User	A field to document who created the field/record in GIS			TRUE	
CREATED_DATE	Date		Created Date	A field to document the date the field/record was created			TRUE	
COORDSOURCE	Text	20	Coordinate Source	Field/Record source (e.g., field surveyed, record drawings, etc.)	dCoordSource		TRUE	
FIELDVERIFIED	Text	5	Field Verified	A field to document whether someone has actually verified in person whether the structure actually exists in the location shown	BooleanDomain		TRUE	
GEN_COMMENTS	Text	255	General Comments	Comments field in put general comments as needed.			TRUE	

Backflow Preventor (wBackflowPreventor)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Precision	Scale	Notes
ObjectID	Object ID						FALSE			
FACILITYID	String	9	Facility Identifier	Locally assigned Facility Identifier			TRUE			
WSSC_ID	String	**TBD**	WSSC Permit #	WSSC Permit Number						
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase						
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase						Sample ID (DBP000001)
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE			
LOCDESC	String	200	Location Description	Text Description of the geographic location			TRUE			
ROTATION	Double	8	Rotation	Map Symbol Rotation value			TRUE			
DIAMETER	Double	8	Diameter	The diameter of the pipe the valve is attached to	piPipeDiameter		TRUE			
VALVETYPE	String	30	Valve Type	Type of control valve	piControlValveType		TRUE			
ENABLED	SmallInteger	2	Enabled	Enabled	EnabledDomain	1	TRUE			
ACTIVEFLAG	SmallInteger	2	Active Flag	Indicates if the feature is in use/active	BooleanDomain	1	TRUE			
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE			
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE			
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE			
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE			

Hydrants **(wHydrant)**

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
ObjectID	Object ID						FALSE	
FACILITYID	String	9	Facility Identifier	Locally assigned Facility Identifier			TRUE	
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase				Sample ID (DWH000001)
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
WSSC_ID	String	**TBD**	WSSC Permit #	WSSC Permit Number				
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
LOCDESC	String	200	Location Description	Text Description of the geographic location			TRUE	
ROTATION	Double	8	Rotation	Map Symbol Rotation value			TRUE	
MANUFACTURER	String	30	Manufacturer	The manufacturer of the hydrant	wHydrantManufacturer		TRUE	
OPERABLE	SmallInteger	2	Operable	Indicates if the hydrant can be operated	BooleanDomain	1	TRUE	
LASTSERVICE	Date	8	Last Service Date	The last date the hydrant was serviced			TRUE	
ENABLED	SmallInteger	2	Enabled	Enabled	EnabledDomain	1	TRUE	
ACTIVEFLAG	SmallInteger	2	Active Flag	Indicates if the feature is in use/active	BooleanDomain	1	TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE	
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE	
FLOW	Double	8	Flow Rate (GPM)	Flow Rate in gallons/minute			TRUE	

Water Meters (wWaterMeter)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
ObjectID	Object ID						FALSE	
FACILITYID	String	9	Facility Identifier	Locally assigned Facility Identifier			TRUE	
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase			TRUE	Sample ID (DWM000001)
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
WSSC_ID	String	**TBD**	WSSC Permit #	WSSC Permit Number				
ACCOUNTID	String	30	Account Number	Water billing account identifier			TRUE	
METSERVICE	String	5	Metered Service	An indicator used to signify whether the service connection is metered	YesNo	Yes	TRUE	
SERVICETYPE	String	50	Service Type	The type of service connection	wServicePointType		TRUE	
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
LOCDESC	String	200	Location Description	Text Description of the geographic location			TRUE	
ROTATION	Double	8	Rotation	Map Symbol Rotation value			TRUE	
LOCATIONID	String	20	Location Identifier	Location Identifier			TRUE	
CRITICAL	SmallInteger	2	CriticalCustomer	Flag to indicate if this is a Critical Customer	BooleanDomain	0	TRUE	
ENABLED	SmallInteger	2	Enabled	Enabled	EnabledDomain	1	TRUE	
ACTIVEFLAG	SmallInteger	2	Active Flag	Indicates if the feature is in use/active	BooleanDomain	1	TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE	
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE	

AliasName	Description	Domain	DefaultValue	IsNullable	Notes
				FALSE	
Facility Identifier	Locally assigned Facility Identifier			TRUE	
FMS ID	Links FMS assets to Master Water Utility Geodatabase				Sample ID (DSV000001)
UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
WSSC Permit #	WSSC Permit Number				
Install Date	The date the asset was installed			TRUE	
Location Description	Text Description of the geographic location			TRUE	
Rotation	Map Symbol Rotation value			TRUE	
Diameter	The diameter of the pipe the valve is connected to	piPipeDiameter	1	TRUE	
Valve Type	Type of curb stop valve	piSystemValveType	Roundway	TRUE	
Normally Open	Flag to indicate if the device is normally open	BooleanDomain	1	TRUE	
Turns To Close	TurnsToClose			TRUE	
Operable	Indicates if the asset can be operated	BooleanDomain	1	TRUE	
Currently Open	Flag to indicate if the device is currently open	BooleanDomain	1	TRUE	
Enabled	Enabled	EnabledDomain	1	TRUE	
Active Flag	Indicates if the feature is in use/active	BooleanDomain	1	TRUE	
Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE	
Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE	
Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
Last Editor	The user who performed the last update			TRUE	

Water Supply Pipes (wWaterSupplyLine)

Field	DataType	Length	AliasName	Description	Domain	DefaultValue	IsNullable	Notes
ObjectID								
FACILITYID	String	9	Facility ID	Locally assigned Facility Identifier			TRUE	Sample ID (DWS000001)
FMS_ID	String	**TBD**	FMS ID	Links FMS assets to Master Water Utility Geodatabase				
UMD_ID	String	**TBD**	UMD Project ID #	Links UMD Project ID to Master Water Utility Geodatabase				
WSSC_ID	String	**TBD**	WSSC Permit #	WSSC Permit Number				
INSTALLDATE	Date	8	Install Date	The date the asset was installed			TRUE	
MATERIAL	String	20	Material	Material the asset is manufactured with	piPipeMaterial		TRUE	
DIAMETER	Double	8	Diameter	The diameter of the asset	piPipeDiameter		TRUE	
MAINSHAPE	String	50	Main Shape	The shape of the gravity main	piPipeShape		TRUE	
DESIGNLENGTH	Double		Design Length	Length of the stormwater pipe			TRUE	
WATERSHED	Text	25	Watershed	Information to document which watershed the infrastructure is in			TRUE	
CREATED_USER	Text	25	Created User	A field to document who created the field/record in GIS			TRUE	
CREATED_DATE	Date		Created Date	A field to document the date the field/record was created			TRUE	
COORDSOURCE	Text	20	Coordinate Source	Field/Record source (e.g., field surveyed, record drawings, etc.)	dCoordSource		TRUE	
FIELDVERIFIED	Text	5	Field Verified	A field to document whether someone has actually verified in person whether the structure actually exists in the location shown	BooleanDomain		TRUE	
WATERTYPE	String	30	Water Type	Indicates the type of water in the pipe	wWaterType	Potable	TRUE	
TRANSMISS	String	5	Transmission System	Indicates if the main is part of the transmission system	YesNo		TRUE	
LINEDYEAR	String	4	Year Lined	Year the pipe was lined			TRUE	
LINERTYPE	String	20	Liner Type	The type of liner	piLiningMethod		TRUE	
DOWNELEV	Double	8	Downstream Elevation	The down stream elevation where the pipe meets the manhole			TRUE	
UPELEV	Double	8	Upstream Elevation	The upstream elevation where the pipe meets the manhole			TRUE	
SLOPE	Double	8	Slope	The slope of the main			TRUE	
FROMST	String	11	From Structure	The upstream structure			TRUE	
TOST	String	11	To Structure	The downstream structure			TRUE	
ENABLED	SmallInteger	2	Enabled	Enabled	EnabledDomain	1	TRUE	
LIFECYCLESTATUS	Text	20	Life Cycle Status	Indicates the life cycle status of the asset	dLifeCycleStatus		TRUE	
OWNEDBY	SmallInteger	2	Owned By	Indicates which organization owns the asset	AssetOwner	1	TRUE	
MAINTBY	SmallInteger	2	Managed By	Indicates which organization maintains the asset	AssetManager	1	TRUE	
SUMFLOW	Double	8	Flow Summary	The sum of flow			TRUE	
LASTUPDATE	Date	8	Last Update Date	The date the feature was last updated in the maintenance database			TRUE	
LASTEDITOR	String	50	Last Editor	The user who performed the last update			TRUE	
GEN_COMMENTS	Text	255	General Comments	Comments field in put general comments as needed.			TRUE	
AncillaryRole	SmallInteger	2	AncillaryRole	AncillaryRole (Source or Sink)	AncillaryRoleDomain	0	TRUE	Determines if feature is a source or a sink for flow direction

Attachment E

UNIVERSITY OF MARYLAND

Department of Environmental Safety,

Sustainability, and Risk

ILLICIT DISCHARGE DETECTION AND ELMINATION (IDDE) PLAN

July 2017

Table of Contents

TABLES:

Appendices:

Appendix A General Location Map

Appendix B Site Map and Outfall Photo Log

Appendix C UMD Illicit Discharge and Connection Stormwater Ordinance

Appendix D UMD Illicit Discharge Incident Tracking Sheet

Appendix E IDDE Outfall Inspection Form

Appendix F IDDE Training Materials

SECTION 1: PURPOSE AND FACILITY DESCRIPTION

1.1 Purpose of Illicit Discharge Detection & Elimination Plan

The purpose of this program is to provide for the health, safety, and general welfare of the students, staff, and faculty of the University of Maryland (UMD) through the regulation and elimination of non-stormwater discharges to the storm sewer system to the Maximum Extent Practicable (MEP) as required by federal and state law. This program establishes methods for controlling the introduction of pollutants into the storm sewer system in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges associated with the Municipal Separate Storm Sewer System (MS4) general permit (Permit No. 05-SF-5501).

This Illicit Discharge Detection and Elimination (IDDE) plan is designed to identify and effectively eliminate illicit discharges and connections to UMD's MS4. The University's IDDE program also includes municipal storm sewer mapping, policies, public education, reporting, recordkeeping, and staff training elements.

Illicit discharges are defined as a measurable flow containing pollutants and/or pathogens to a MS4 during dry weather. A storm drain with measurable flow but containing no pollutants or pathogens is simply considered a discharge. NPDES regulates the discharge of stormwater under the authority of the Federal Clean Water Act. The United States Environmental Protection Agency (USEPA) designates authority to administer NPDES permits within the State of Maryland.

1.2 Background Information and Site Description

Discharges from MS4s often include waste and wastewater from non-stormwater sources. A significant portion of dry weather flows are likely from illicit and/or inappropriate discharges and connections to a MS4.

Illicit discharges can enter a system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or chemicals dumped directly into a drain). This results in untreated discharges which could contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, and pathogens to receiving water bodies. Pollutant levels from these illicit discharges have been shown in USEPA studies to be high enough at times to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health. Examples of illicit discharges include: sanitary wastewater, effluent from septic tanks, car wash wastewater, improper oil disposal, radiator flushing disposal, laundry wastewaters, spills from roadway accidents, and improper disposal of auto and house hold toxics. The UMD's IDDE program, along with public outreach and reporting, helps combat these potential illicit discharges. UMD treats some of its

stormwater discharges using various BMPs, including oil-water separators, retention ponds, swales, and stormceptors.

UMD was chartered in 1856 as an agricultural college and has gradually evolved into the distinct higher education system that it is today. The campus is located in a suburban area, bounded by a mixture of commercial and residential areas on all sides. UMD is bordered by University Boulevard to the north and west, Paint Branch Parkway to the east, and Knox Road to the south. Baltimore Avenue (Route 1) bisects the southeastern portion of the campus. The campus currently consists of numerous buildings on 1,335 acres of land. A site vicinity map is included in Appendix A.

The stormwater drainage system at UMD consists of intermittent surface flow and catch basins located throughout the campus. Approximately 40% of the campus is considered impervious. The campus maintains a MS4 that consists of approximately ninety (90) outfalls. The outfalls discharge to Campus Creek, Guilford Run, Paint Branch stream, as well as several unnamed tributaries. Water from these discharge points ultimately flows to the Anacostia River, which later empties into the Potomac River, a tributary of the Chesapeake Bay. The campus receives all of its potable water from the Washington Suburban Sanitary Commission (WSSC). The distribution system includes periodic flushing of fire hydrants for maintenance purposes.

The University discharges contact and non-contact cooling water, boiler blowdown and condensate from various buildings onsite to the MS4 in accordance with State Discharge Permit No. 08-DP-2618 (NPDES Permit No. MD0063801).

Additionally, UMD is authorized to discharge water from swimming pools in accordance with Maryland General Permit 12-SI-7192: General Permit for Discharges from Swimming Pools & Spas, including Baptismal Fonts (NPDES Permit No. MDG767192).

1.3 Definitions

For the purposes of this program, the following shall mean:

Best Management Practices (BMPs): 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 stormwater, receiving waters, or stormwater 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.

Clean Water Act: The U.S. Water Pollution Control Act (33 US.C. §1251et seq.), and any subsequent amendments thereto.

Construction Activity: Activities subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include, but are not limited to, clearing and grubbing, grading, excavating, and demolition. Additionally, projects resulting in 5,000 square feet or more and 100 cubic yards or more require an approved sediment and erosion control plan.

Conveyance: Any structural process for transferring stormwater between at least two (2) points, including piping, ditches, swales, curbs, gutters, catch basins, channels, storm drains, and roadways.

Hazardous Materials : Any material, including any substance, waste, or combination threat 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: Any direct or indirect non-stormwater discharge to the storm sewer system, except as exempted in section 4.1 Table l.

Illicit Connections: An illicit connection is defined as either of the following:

- *Any drain or conveyance, whether on the surface or subsurface that allows an illegal discharge to enter the storm drain system including, but not limited to, any conveyances that allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or:*

- *Any drain or conveyance connected from a commercial or industrial land use to the storm drain system that has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.*

Municipal Separate Storm Sewer System (MS4): The system of conveyances (including sidewalks, roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned and/or operated by UMD and designed or used for collecting or conveying stormwater, and that is not used for collecting or conveying sewage.

National Pollutant Discharge Elimination System (NPDES) Permit: a permit issued by USEPA (or by a State under authority delegated pursuant to 33 USC§ 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Stormwater Discharge: Any discharge to the storm drain system that is not

composed entirely of stormwater.

Outfall: A point source where the MS4 discharges from a pipe, ditch or other discreet conveyance directly or indirectly to waters of the State of Maryland, or to another MS4.

Person: Any city utility, individual, contractor, student, staff, or faculty.

Pollutant: Anything that 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, solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, 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; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Spill Prevention Control & Countermeasure (SPCC) Plan: A document that describes procedures put in place to prevent and respond to oil and oil product spills.

Storm Sewer System: System of conveyances by which stormwater is collected and/or directed, 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.

Stormwater: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Stormwater Pollution Prevention Plan (SWPPP): A document that describes the BMPs and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater conveyance systems, and/or receiving waters to the Maximum Extent Practicable.

Wastewater: Any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

SECTION 2: STORMWATER MAPPING

The development of a storm sewer system map is used to demonstrate a basic awareness of the intake and discharge areas of the system. It is needed to help determine the extent of discharge of dry weather flows, the possible sources of dry weather flows, and the particular water bodies these flows may be affecting. The availability of this map clearly demonstrates such awareness.

UMD will utilize AutoCAD, GPS, and GIS technologies to map all conveyance systems and outfalls. All outfall locations will then be incorporated into UMD's mapping system and database. All outfalls will be photographed and numbered for reference purposes. Maps will be available to print for public review. A current site map and photo log is included in Appendix B. UMD is in the process of updating and enhancing its existing maps; site maps will be updated as needed. The photo log in Appendix B will be completed as each outfall is inspected as described section 4.1.1. of this plan.

SECTION 3: ORDINANCES

3.1 State Ordinances

The Code of Maryland Regulations (COMAR) Title 26, Subtitle 4 identifies all of the State's ordinances for water management, specifically water pollution control and abatement. The ordinances can be online found at:

http://www.dsd.state.md.us/COMAR/subtitle_chapters/26_Chapters.aspx#Subtitle04

3.2 County Ordinances

There are currently no county ordinances that apply to UMD's IDDE. However, Prince George's County Code of Ordinances Subtitle 32, Division 3 encompasses its stormwater management ordinances. These ordinances can be found at:

https://www.municode.com/library/md/prince_george's_county/codes/code_of_ordinances

3.3 City Ordinances

{RESERVED}

3.4 University Policies

While the University of Maryland does not have a specific ordinance relating to illicit discharge detection and elimination, Section VI of the UMD Policies grants authority to the Department of Environmental Safety, Sustainability and Risk (ESSR), which was formerly known as the Department of Environmental Safety, to ensure compliance with all environmental regulations. Therefore, ESSR will implement this IDDE Plan since it is required by its NPDES General Permit for Discharges from Small MS4s (State Permit No. 05-SF-5501; NPDES Permit No. MDR05501). More details regarding this University Policy are included in Appendix C of this plan. The complete directory of the University of Maryland's Policies can be found at:

https://www.president.umd.edu/administration/policies

SECTION 4: DETECTION PROCEDURES

4.1 Prohibition of Illicit Discharges

Illicit discharges, as defined by the USEPA, are defined as a storm drain that has measurable flow during dry weather containing pollutants and/or pathogens. This means any non-permitted discharge to a regulated MS4 or to waters of the State, that does not consist entirely of stormwater, except for naturally occurring floatables, such as leaves, tree limbs, or authorized non-stormwater discharges covered under a NPDES permit.

Illicit discharges can be categorized as either direct or indirect. Examples of direct illicit discharges include sanitary wastewater; piping directly connected from a home to the storm sewer; materials (e.g., used motor oil) that have been dumped illegally into a storm drain catch basin; or a cross-connection between the sanitary sewer and storm sewer systems. Examples of indirect illicit discharges include: a damaged sanitary sewer line leaking into a storm sewer line, or a failing septic system leaking into a storm sewer line, or causing surface discharge into the storm sewer.

The MS4 general permit authorizes the following non-stormwater discharges provided the discharges have been determined unsubstantial contributors of pollutants, as stated in Part VI.C. UMD will not consider items listed in Table 1 as illicit discharges. If UMD determines any of these activities to be illicit discharges in the future, UMD will update its IDDE Plan accordingly.

Table 1.
Exempt Non-Stormwater Discharges

Irrigation water	Springs
Uncontaminated pumped groundwater	Water from crawl space pumps
Diverted stream flows	Footing / foundation drains
Rising ground waters	Lawn watering runoff
Uncontaminated groundwater infiltration	Flows from riparian habitats and wetlands
Discharges from firefighting activities	Residual street wash water

Table 2.
Non-Stormwater Discharges Authorized by Other Permits

Source	Permit Number
Dechlorinated discharges from potable water sources	08-DP-2618 (MD0063801)
Air conditioning condensate	08-DP-2618 (MD0063801)
Steam Condensate	08-DP-2618 (MD0063801)
Contact / Non-contact cooling water	08-DP-2618 (MD0063801)
Swimming pool discharge	12-SI-7192 (MDG767192)

4.2 Prohibition of Illicit Connections

The construction, use, maintenance, or continued existence of illicit connections to the storm drain system is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under laws or practices applicable or prevailing at the time of connection. A person is considered to be in violation of this program if the person connects a line conveying sewage to the MS4, or allows such a connection to continue. Improper connections in violation of this program must be disconnected and redirected, if necessary, to the sanitary sewer system.

4.3 Procedure to Report an Incident

4.3.1 Notification of Spills

Notwithstanding other requirements or laws, as soon as any person responsible for any known or suspected release of materials which are resulting or may result in an illicit discharge of pollutants into stormwater runoff, the storm sewer system, or water of the State, said person shall immediately take all necessary actions and measures to: stop, contain, and cleanup such release. In the event of such a release of an illicit discharge, said person shall immediately notify the illicit discharge hotline (Environmental Affairs Unit) at 301-405-3990. Reported spills will be tracked by Environmental Affairs in the Illicit Discharge Incident Tracking Sheet in Appendix D of this Plan.

Spill procedures regarding emergency actions, such as radiation, chemical, or biological, can be found at this link: https://www.essr.umd.edu/documents

4.3.2 Reporting

If an illicit discharge is identified during a routine inspection or while responding to a notification, ESSR will write a report for each illicit discharge and its location. ESSR will maintain a database that documents all activities associated with the UMD's IDDE Plan ranging from mapping, outfall screening, source identification, and photographs. Records of all illicit discharges and activities associated with this plan will be documented and submitted to Maryland Department of the Environment (MDE) with UMD's annual report.

Any illicit discharges in violation of UMD's SPCC and/or SWPPP will be reported as outlined within their respective plan(s).

4.4 Inspection Procedures

4.4.1 Outfall Inspections

The Outfall Inspection Form will be completed for at least 50% of the outfalls each year, as required by MDE. The purpose of the inspections is to screen for any source of an illicit discharge

and to eliminate any improper connection or illicit discharge to the storm drain system. The inspection sheets are used during dry weather to record descriptive and quantitative information about each outfall inspected in the field.

Field staff conducts an outfall inspection by photographing each outfall and characterizing its dimensions, shape and component material, and recording observations on basic sensory and physical indicators. Each outfall with a flow will have field measurements taken for temperature, pH, ammonia, and chlorine. Basic field equipment needed for the inspections include: waders, a measuring tape, watch, camera, pH probe, ammonia test strips, chlorine meter, and sterile gloves. The Outfall Inspection Form is located in Appendix E. Based on field screening results, additional sampling and/or investigation may be conducted, as warranted.

Additionally, in accordance with UMD's State Discharge Permit No. 08-DP-2618 (NPDES Permit No. MD0063801), each month the twelve (12) regulated outfalls (Outfalls 001-005, 007, 010, 012, 014, 016, 018, 019) will be tested for the required in-field parameters and laboratory analyses. These parameters can be found in Table 3. Additional inspections may be required depending upon the results of initial inspection. UMD will also conduct outfall inspections in response to community, student, and employee complaints, as deemed appropriate.

Table 3.
Water Quality Test Parameters and Uses

Water Quality Test	Permit Limitations	Method
Temperature	<90°F (32°C)*	In-field thermometer
pH	6.5-8.5	pH meter in field
Total Residual Chlorine	0.011 mg/l**	TRC meter in field
Discharge Flow	REPORT VALUE	Calculated in field
Total Copper	9.0 mg/l	Laboratory analysis
Total Nitrogen	REPORT VALUE	Laboratory analysis
Oil & Grease	15 mg/L***	Laboratory analysis
Total Phosphorus	REPORT VALUE	Laboratory analysis
Total Kjeldahl Nitrogen	REPORT VALUE	Laboratory analysis
Nitrate/Nitrite as N	REPORT VALUE	Laboratory analysis

*Temperature is only monitored in June, July and August.
**Total Residual Chlorine reporting limit of 0.01 is unattainable in field settings, so a value of 0.1 mg/l is used as the reporting limit.
***Oil and Grease is only tested on three (3) of the twelve (12) outfalls.

4.4.2 Source Identification

When identifying any illicit discharges or the source of any violations for their NPDES permit, ESSR will locate the original discharge point by using a map of the storm sewer system and physically following a drainage ditch, or identifying the most up-pipe manhole with a junction. ESSR may opt to collect additional field and laboratory samples as he or she makes their way

upstream or up-pipe in order to compare the outfall sample results with the in-line results in hope of identifying similarities between the sites. If, from following the drainage ditch or inspecting the manhole, ESSR can determine the direction from which the discharge originates, ESSR will then continue upstream or to the next up-pipe manhole until he or she can pinpoint the source or the general vicinity from where the discharge is originating. If ESSR cannot identify the specific source through visual observation, a dye test, smoke test, or video inspection will be necessary to determine the source of the discharge.

4.5 Immediate Response Procedures

All illicit discharges should be reported to the University's Environmental Affairs Unit at (301)-405-3990 as soon as possible. The report should include: the location of the problem, time the problem was found, odor/color/turbidity/floatables, photo(s), and any other relevant information.

Any illicit discharges in violation of UMD's SPCC and/or SWPPP will follow the reporting procedures as outlined within their respective documents.

Spill procedures regarding emergency actions for various materials, such as chemical, radiological, or biological, can be found at this link:

https://www.essr.umd.edu/documents

4.6 Investigation and Response Procedures

In the case of the identification of an illicit discharge, it is necessary to conduct an investigation to identify and eliminate the source of the discharge. An investigation may result from:

- A report to UMD ESSR staff from the general public;
- A report from a UMD staff member or student; or
- Results of outfall screening.

The determination of if an illicit discharge has occurred will be made by UMD ESSR staff. In all cases of an illicit discharge, the UMD Illicit Discharge Incident Tracking Form, found in Appendix D, must be completed for MS4 permit annual reporting documentation purposes. An investigation of an illicit discharge may result in the source being easily identified or may be complex and should utilize the methods outline in Section 4.4.2 of this plan.

4.6.1 Investigation Protocol

Based on the familiarity of the campus and its drainage areas, an initial field evaluation may easily identify the source of an illicit discharge. Once found, the source should be documented on the UMD Illicit Discharge Tracking Form. The remainder of the form shall be completed as appropriate to indicate the source has been eliminated, if applicable, and provide an ending date

for the investigation. It is critical that the UMD Illicit Discharge Tracking Form is completed in order to demonstrate that illicit discharges have been addressed.

If the source of an illicit discharge is not easily identified, further investigation may be necessary and should be guided by the following procedures:

1. Track the illicit discharge to its point of entry into the storm sewer. Tracking can be supplemented with review of the UMD outfall mapping to identify the drainage area of the illicit discharge. Cross reference the mapping with the UMD SWPPP mapping that indicates areas most likely to be the source of pollutants.

2. Conduct field inspection of the drainage area near the point of entry to identify the potential pollutant source. Document potential sources with photos, ensuring the photos give the appropriate context to the location of the source.

UMD staff will primarily rely upon visual inspections of the areas in the storm sewer system above the outfall at which an illicit discharge is detected. Sampling and analysis can be performed as necessary to determine the characteristics of the illicit discharge and to help identify the most likely source. Improper connections and unpermitted cross-connections to the storm sewer system can be detected by utilizing a combination of methods to investigate non-stormwater discharges, such as visual/video inspections, and dye or smoke tracer testing. Dry-weather testing at a discharge point assists in identification of abnormal conditions such as sporadic or continuous discharge, which can facilitate tracking of the source. Tracking techniques also include visual inspections of drainage structures and lines, dye testing, video inspection, indicator monitoring, smoke testing, and optical brightener monitoring traps. Other more elaborate approaches include using remote sensing tools to identify soil moisture, water temperature, and vegetation anomalies associated with illegal dumping activities.

4.7 Recordkeeping

The NPDES Phase II Permit requires UMD to keep records of all stormwater program activities and IDDE records for a minimum of five (5) years. UMD will maintain a database of illicit discharges and investigation reports, citizen complaints, outfall inspections, and corrective actions. All paper copies will be stored in a file designated for illicit discharges and located in the UMD ESSR office. Electronic copies will be available on demand.

SECTION 5: CORRECTIVE ACTIONS & ENFORCEMENT

In order to maintain compliance with the permit, ESSR has the authority to notify entities within the UMD MS4 of deficiencies and/or illicit discharges and to require corrective action to be performed. In the case of faculty, staff, or students under the control of UMD, ESSR will work directly with the party/parties to address and correct any deficiencies and/or illicit discharges. In the event that tenants or other non-UMD entities are involved in the deficiencies and/or illicit discharges, ESSR will notify the party/parties of the required corrective actions and establish a timeframe for compliance. In the event that the party/parties do not comply, the incident will be referred to MDE for enforcement action. UMD's ESSR department will enforce compliance with the IDDE Plan and work with the party/parties to obtain compliance. ESSR, however, is not an "enforcement" entity in the traditional sense and, as such, will not impose fines, penalties, etc. If situations arise where an illicit discharge is determined to be willful and criminal in nature, the matter may be referred to the University of Maryland Police Department for further action, in conjunction with referral to MDE.

Deficiencies and/or illicit discharges at UMD construction sites will be handled differently; those will be reported to the Facilities Management Department by ESSR. The Facilities Management Department will then work with their construction contractors to undertake the necessary corrective action(s). If warranted, the Facilities Management Department and/or ESSR will refer the issue to the MDE for enforcement action.

SECTION 6: PUBLIC EDUCATION

6.1 Public Education and Outreach

UMD shall implement and maintain a public education and outreach program to help reduce illicit discharges of pollutants. Public education and outreach can be coordinated with other portions of UMD's stormwater management program, developed independent of other pollution control efforts, or implemented by an entity other than the permittee. At a minimum, the public education program shall contain information about the impacts of illicit discharges on receiving waters, why controlling these discharges is important, and what the public can do to reduce illicit discharge pollutants in stormwater runoff.

Examples of the information that should be considered by the permittee when developing a public education and outreach program include:

1. The types and causes of pollutants found in urban runoff;
2. The importance of reducing, reusing, and recycling;
3. The consequences of stormwater pollutants;
4. Proper disposal of vehicle and equipment fluids;
5. Outfall signage and storm drain stenciling;
6. Residential car washing;
7. Proper pet waste management;
8. Increasing proper disposal of hazardous waste and household hazardous waste (HHW); and
9. How citizens and staff can contribute to UMD's stormwater management and IDDE program through the following:
    a. Proper disposal of vehicle fluids;
    b. Lawn care and landscaping;
    c. Hazardous material storage, use, and disposal (e.g., herbicides, pesticides, and fertilizers);
    d. Spill and illegal dumping hotline; and
    e. Any other components deemed necessary to ensure adequate public outreach and education.

6.2 Public Involvement and Participation

UMD shall implement and maintain a public involvement and participation program. UMD shall, at a minimum, comply with all State public notice requirements in actions or decisions made having to do with stormwater management and the IDDE program. Additionally, UMD will implement different programs to assist with prevention or and the identification of illicit discharges. This can include: stream cleanups, illicit discharge hotline, promoting educational programs in for faculty, staff, and students, and providing information sessions/material on request. UMD requires stormwater training for staff involved in activities that are considered a high risk for potential stormwater pollution, such as those facilities that are covered by the 12-SW

General Permit for Stormwater Associated with Industrial Activity. UMD also participates in a storm drain inlet marking program.

SECTION 7: STAFF TRAINING

The MS4 Permit requires UMD to provide annual training to applicable field personnel in recognition and reporting of illicit discharges. UMD requires stormwater training for staff involved in activities that are considered a high risk for potential stormwater pollution, such as those facilities that are covered by the 12-SW General Permit for Stormwater Associated with Industrial Activity. UMD ESSR will provide training for field staff and other employees on ways to identify and report non-stormwater discharges, spills, illicit connections, and illegal dumping. The field staff members will receive additional training in appropriate methods to identify, trace, and remove the source of an illicit discharge as well as effective methods to identify emergencies and contain spills. Additionally, UMD ESSR will provide training to other staff members in other departments who may come into contact with illicit discharge through their field work on illicit discharge identification and reporting procedures. Any and all staff operating the IDDE hotline will be trained on how to respond to calls. Training will be provided annually to keep all staff members up-to-date. Training materials are available in Appendix F.

SECTION 8: IDDE CERTIFICATION

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

Name: _____ Title: _____

Signature: _____ Date: _____

SECTION 9: IDDE EVALUATION AND MODIFICATIONS

Revision	Date	Details / Comments
Revision 00	July 2017	Original IDDE Plan

SECTION 10: REFERENCES

The following references were used to prepare this plan and contain supplemental information that may be helpful to City staff.

IDDE Program Manuals:

Center for Watershed Protection and Robert Pitt. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments.* October 2004. U.S Environmental Protection Agency. Washington, D.C. https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

New England Interstate Water Pollution Control Commission. *Illicit Discharge and Elimination Manual: A Handbook for Municipalities.* January 2003. Lowell, MA. http://www.neiwpcc.org/neiwpcc_docs/iddmanual.pdf

Attachment F-Outfall Monitoring Data Sheets

University of Maryland Illicit Discharge Site Visit Report

Outfall ID: OF 27
Location: Parking Lot 11B
Subwatershed: Campus Creek
Date: 10/4/17
Investigators: Kelsey Moxey, Carly Cushing, Alex Galbreath

At 9:50 on October 4, 2017 the investigative team inspected outfall OF 27, see Figures 1 and 2 below. Standing water was observed, however, the outfall was not currently flowing at the time of inspection. The water was odorless. A ferruginous film was observed on the surface of the pooled water. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 27	18.5	7.9	3	0

Figure 1. OF 27

Figure 2. OF 27 Ferruginous film

Outfall ID: OF 42
Location: Behind Building 255
Subwatershed: Campus Creek
Date: 10/4/17
Investigators: Kelsey Moxey, Carly Cushing, Alex Galbreath

At 11:53 on October 4, 2017 the investigative team inspected outfall OF 42, see Figures 3 and 4 below. There was major damage to the outfall pipe, which includes corrosion on all three pipes, leaking water from cracks, iron staining on head wall, as well as tree and root growth on top of pipes. The rate of flow was 0.5L/min. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 42	22.01	6.3	0	0.03

Figure 3. OF 42

Figure 4. OF 42 Tree growth and erosion damage

Outfall ID: OF 19
Location: Between Buildings 068 and 255
Subwatershed: Campus Creek
Date: 10/4/17
Investigators: Kelsey Moxey, Carly Cushing, Alex Galbreath

At 13:13 on October 4, 2017 the investigative team inspected outfall OF 19, see Figure 5 below. There was no damage or other physical indicators to report. The rate of flow was 0.78ft/min. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 19	21.06	7.28	0	0.02

Figure 5. OF 19

Outfall ID: OF 04
Location: Behind Building 115
Subwatershed: Paint Branch
Date: 10/5/17
Investigators: Kelsey Moxey, Jessy Cockrell

At 8:46 on October 5, 2017 the investigative team inspected outfall OF 04, see Figure 6 below. The water was clear and odorless; however a substantial amount of foam was present. The rate of flow was 4L/min. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 04	22.07	7.66	0	0.18

Figure 6. OF 04

Outfall ID: OF 03
Location: Behind Building 406
Subwatershed: Paint Branch
Date: 10/5/17
Investigators: Kelsey Moxey, Jessy Cockrell

At 9:07 on October 5, 2017 the investigative team inspected outfall OF 03, see Figure 7 below. The water was clear and odorless; however foam was present. The rate of flow was 2L/min. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 03	21.78	7.92	0.25	0.15

Figure 7. OF 03

Outfall ID: OF 16
Location: Behind Building 011
Subwatershed: Paint Branch
Date: 10/5/17
Investigators: Kelsey Moxey, Jessy Cockrell

At 10:02 on October 5, 2017 the investigative team inspected outfall OF 16, see Figure 8 below. No damage or other physical indicators were reported. The rate of flow was 20L/min. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 16	22.61	7.89	0	0.4

Figure 8. OF 16

Outfall ID: OF 07
Location: Behind Building 247
Subwatershed: Paint Branch
Date: 10/5/17
Investigators: Kelsey Moxey, Jessy Cockrell

At 11:00 on October 5, 2017 the investigative team inspected outfall OF 07, see Figure 9 below. No damage or other physical indicators were reported. The rate of flow was 3.33ft/min. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 07	21.00	7.92	0	0

Figure 9. OF 07

Outfall ID: OF 21
Location: Behind Building 201
Subwatershed: Paint Branch
Date: 10/5/17
Investigators: Kelsey Moxey, Jessy Cockrell

At 11:21 on October 5, 2017 the investigative team inspected outfall OF 21, see Figure 10 below. The concrete on the upper rim of the outfall was chipping and there was a large root cluster at the mouth of the pipe. An accurate flow measurement was unable to be taken due to the root cluster. The water was tested for ammonia, chlorine, temperature and pH. Results are summarized below.

	Temperature (°C)	pH	Ammonia (mg/L)	Chlorine (mg/L)
OF 21	18.9	8.2	0.5	0.03

Figure 10. OF 21

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 27	
Today's date: 10/4/17		Time (Military): 950	
Investigators: C.C. / KM / AG.		Form completed by: KM	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: #1, 2, 3 C.C. Outfall Channel	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Storm water pool in outfall ~~Red orange~~

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 24"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial	No flow, Storm water pool in outfall			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature		65.3	°F	Thermometer
pH		7.90	pH Units	Test strip/Probe
Ammonia		[illegible] 3	mg/L	Test strip
Chlorine		0	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☒ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☒	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☒ Orange ☒ Red ☐ Other:	☒ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☒	☐ Excessive ☐ Inhibited	tree growth in swale
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Discrepancy

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

~~- Small pool of Reddish-orange water in front of outfall~~
~~- Color more visible in this area~~
coming from upstream

10/4/17 7:07 21.73
3.84 4.48 0.0 8.39
2.87
HORIBA CALIBRATION

IDDE OUTFALL INSPECTION FORM

(OF 27B)

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: New outfall @ OF27 from parking lot	
Today's date: 10/4		Time (Military): 1005	
Investigators: KM/CC/AG		Form completed by: KM	
Temperature (°F): 75°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: #4	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

located @ Southwest corner of Lot 11B

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: [redacted] ☐ Partially ☐ Fully With Sediment: [redacted] ☐ Partially ☐ Fully
☒ **Open drainage**	☐ Concrete ☐ Earthen ☑ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☒ Other: ____		Depth: 1' Top Width: ____ Bottom Width: 5'	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☑ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

(OF 27C)

Subwatershed: Campus Creek		Outfall ID: New OF	
Today's date: 10/4/17		Time (Military): 1007	
Investigators: KM (CC) AG		Form completed by: KM	
Temperature (°F): ~75°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: #5 - pipe	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known): located @ south west corner of lot 113 Near overpass

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 18"	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☒ Fully
☐ **Open drainage**	☒ ~~Concrete~~ ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 26	
Today's date: 10/4/17		Time (Military): 1015	
Investigators: KM / CC / AG		Form completed by: KM	
Temperature (°F): 75°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 6	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

(OF 26A)

Subwatershed: Campus Creek		Outfall ID: New@OF26	
Today's date: 10/4/17		Time (Military): 1020	
Investigators: KM/CC/AG		Form completed by: KM	
Temperature (°F): ~75°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 7	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Near 26 Connects to retention pond w/ Risers

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☒ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☑ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially 2" ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No
2.	If yes, collected from:	☐ Flow	☐ Pool
3.	Intermittent flow trap set?	☐ Yes	☐ No If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF28	
Today's date: 10/4/17		Time (Military): 1059	
Investigators: KM/CC ~~TAG~~		Form completed by: KM	
Temperature (°F): ~70°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: None	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known): Could not locate, possibly filled w/sediment

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls N/A

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek K		Outfall ID: OF30	
Today's date: 10/4/17		Time (Military): 1022	
Investigators: KM/CC/AG		Form completed by: KM	
Temperature (°F): ~75°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 8	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 30"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus creek		Outfall ID: OF 32	
Today's date: 10/4/17		Time (Military): 1017	
Investigators: KM / CC / AG		Form completed by: KM	
Temperature (°F): ~ 75°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 9	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 24"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF31	
Today's date: 10/4/17		Time (Military): 1046	
Investigators: KM/CC/AC		Form completed by: KM	
Temperature (°F): 80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 10	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 30"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*			Standing water, Storm water retention pond	
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus creek		Outfall ID: OF 29	
Today's date: 10/4/17		Time (Military): 1052	
Investigators: KM / CC / AG		Form completed by: KM	
Temperature (°F): 80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 11	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known): Completly filled w/ sediment cannot see pipe, only headwall

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: Unknown Unable to measure	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☒ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☒	☐ Excessive ☐ Inhibited	Heavily Vegetated
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 39	
Today's date: 10/14/17		Time (Military): 1118	
Investigators: KM, C.C.		Form completed by: KM	
Temperature (°F): 80°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 12 Inlet	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

SW Inlet found, No point of Discharge could be identified sediment blocking flow out of inlet

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____ Unknown	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☒ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

removal of sediment from inlet to allow for proper flow

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus creek		Outfall ID: OF 38	
Today's date: 10/4/17		Time (Military): 1120	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~80°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 14 (pipe), 15 (erosion)	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 18"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Spillway is cracked, erosion below creating small gully
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF37	
Today's date: 10/4/17		Time (Military): 1125	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F):	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 16	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):
Standing water inside due to erosion/corrosion of pipe

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☒ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 18"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☒ Corrosion	top of pipe bent inwards bottom of pipe corroded away
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus creek		Outfall ID: OF35	
Today's date: 10/4/17		Time (Military): 1132	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~80°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 17 - pipe 18 - Pooling area	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 36	
Today's date: 10/4/17		Time (Military): 1137	
Investigators: KM/CC		Form completed by: KM	
Temperature (°F): 80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 19	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☒ Steel ☐ Other: _____ Concrete headwall	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☒ Other: 4	Diameter/Dimensions: ~ 8"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially heavy silt ½-3/4 full ☐ ~~Fully~~
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☒	☐ Excessive ☐ Inhibited N/A	2 trees above headwall
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

remove sediment from channel to allow for proper flow

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus creek		Outfall ID: OF 40	
Today's date: 10/4/17		Time (Military): 1143	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~75°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 20	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ½ full 6" sediment ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

(OF 41B)

Section 1: Background Data

Subwatershed:	Campus Creek	Outfall ID:	~~OF 41~~ New OF (potentially) Near OF41 + OF42
Today's date:	10/4/17	Time (Military):	1150
Investigators:	KM / CC	Form completed by:	KM
Temperature (°F):	~ 80° F	Rainfall (in.): Last 24 hours:	None Last 48 hours: None
Latitutde:		Longitude:	
GPS Unit:		GPS LMK #:	
Camera:		Photo #s:	~~21~~ 21

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

located right off road, near OF41, * OF42 erosion around pipe present, exposed pipe

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☒ Other: plastic corrugated pipe	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☒ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 5'	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 42	
Today's date: 10/4/17		Time (Military): 1153	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~80°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 22, 23	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
massive erosion ~10 ft below outfall, pooling below outfall, exposed roots, Channelization

Section 2: Outfall Description

3rd pipe is disjointed / cracked + leaking water before end of outfall

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☒ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☒ Double ☒ Triple ☐ Other: ____	Diameter/Dimensions: 2" 12" 6" o ○ o ↑ flowing, leak/break	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☒ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☒ Moderate ☐ Substantial			12" pipe flowing, others have no flow	

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☒ Flow #1	Volume	1	Liter	Bottle
	Time to fill	2	~~Sec~~ Minutes	stop watch
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature		22.01°C	°F	Thermometer
pH		6.33	pH Units	Test strip/Probe
Ammonia		0	mg/L	Test strip
Chlorine		0.03	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☒ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☒ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☒ Corrosion	Corrosion on all 3 pipes, 3rd pipe leaking → cracked before outfall ends
Deposits/Stains	☒	☐ Oily ☒ Flow Line ☐ Paint ☐ Other:	Stain on head wall
Abnormal Vegetation	☒	☐ Excessive ☒ Inhibited	Tree growth near & on top of pipes
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

*major repairs needed

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 18	
Today's date: 10/4/17		Time (Military): 1257	
Investigators: KM/CC		Form completed by: KM	
Temperature (°F): ~80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 22?	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☐ No ☒ Partially 2" sediment ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☒ Yes ☐ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☒ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume	0.5	Liter	Bottle
	Time to fill	42	Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature		22.26	°C	Thermometer
pH		7.00	pH Units	Test strip/Probe
Ammonia		0	mg/L	Test strip
Chlorine		0	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☒ good	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☒ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	cracking in headwall
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus creek		Outfall ID: OF 43	
Today's date: 10/4/17		Time (Military): 1308	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 23	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☒ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 12"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☐ No ☒ Partially 2/3 full of Sediment ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*			Standing water, pooled	
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial			SW Flow blocked.	

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF19	
Today's date: 10/4/17		Time (Military): 1313	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 24	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 42"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ~1 inch Sediment ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☒ Yes ☐ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☒ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☒ Flow #2	Flow depth	7"	In	Tape measure
	Flow width	2' 0"	Ft, In	Tape measure
	Measured length	3' ___"	Ft, In	Tape measure
	Time of travel	45	S	Stop watch
Temperature		21.06	°C	Thermometer
pH		7.28	pH Units	Test strip/Probe
Ammonia		0	mg/L	Test strip
Chlorine		0.02	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☒ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 46	
Today's date: 10/4/17		Time (Military): 1336	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 25	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: ~~RWAP~~ 36"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ ~~No~~	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☑ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☑	☑ Excessive ☐ Inhibited	vegetation heavy
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF45	
Today's date: 10/4/17		Time (Military): 1330	
Investigators: KM/CC		Form completed by: KM	
Temperature (°F): ~80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 26	

Land Use in Drainage Area (Check all that apply):

- ☒ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 30"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	spillway is broken · erosion surrounding structure
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 47	
Today's date: 10/4/17		Time (Military): 1341	
Investigators: KM / CC		Form completed by: KM	
Temperature (°F): ~ 80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 27	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Soil from possible construction blocking outfall, not connected to pond

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ½ full of sediment ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☒	☐ Excessive ☒ Inhibited	Vegetation + soil blocking outfall exit
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Campus Creek		Outfall ID: OF 48	
Today's date: 10/4/17		Time (Military): 1354	
Investigators: KM/CC		Form completed by: KM	
Temperature (°F): ~80°F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 28 (KM)	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ **Closed Pipe**	☑ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☒ Fully 60%
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

excessive trash & sediment blocking flow

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF 24	
Today's date: 10/5/17		Time (Military): 0830	
Investigators: KM / JC		Form completed by: KM	
Temperature (°F): 105°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 001	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☑ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☑ Other: [illegible]	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☑ Inhibited	-fallen trees on spillway
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF 25	
Today's date: 10/5/17		Time (Military): 0824	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 45° F	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 2	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ **Closed Pipe**	☑ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 12"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially 1/3 ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☑ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF04	
Today's date: 10/5/17		Time (Military): 0840	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 65°	Rainfall (in.): Last 24 hours: N/A	Last 48 hours: N/A	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 3	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☑ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☑ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 4 ft	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☑ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume	1L	(Liter)	Bottle
	Time to fill	10 sec.	(Sec)	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature		22.07	~~°F~~ °C	Thermometer
pH		7.06	pH Units	Test strip/Probe
Ammonia		0	mg/L	Test strip
Chlorine		0.18	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☑ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☑	☑ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☑ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☑	☐ Sewage (Toilet Paper, etc.) ☑ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☑ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF03	
Today's date: 10/5/17		Time (Military): 0907	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 65	Rainfall (in.): Last 24 hours: none	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 4	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☒ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 5 ft	In Water: ☐ No ☐ Partially ☒ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☒ Yes ☐ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☒ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume	0.9	Liter	Bottle
	Time to fill	31	Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature		21.78	°F	Thermometer
pH		7.92	pH Units	Test strip/Probe
Ammonia		0.25	mg/L	Test strip
Chlorine		0.15	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☑	☑ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☑ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☑	☐ Sewage (Toilet Paper, etc.) ☑ Suds ☐ Petroleum (oil sheen) ☐ Other:	☑ 1 – Few/slight; origin not obvious	☑ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF02	
Today's date: 10/5/17		Time (Military): 0924	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 65	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 5	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: ~ 2 ft	In Water: ☐ No ☐ Partially ☒ Fully With Sediment: ☒ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*			Standing water	
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF01	
Today's date: ~~10/5/17~~ 10/5/17		Time (Military): 0945	
Investigators: KM JC		Form completed by: JC	
Temperature (°F): 70°	Rainfall (in.): Last 24 hours: NONE	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 10	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 34"	In Water: ☐ No ☐ Partially ☒ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No	*If No, Skip to Section 5*		Standing water	
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF23	
Today's date: 10/5/17		Time (Military): 0950	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70°	Rainfall (in.): Last 24 hours: None	Last 48 hours: None	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: ~~*~~ No photo	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 10"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: ~~[illegible] 77~~ OF between 23+16	
Today's date: 10/5/17		Time (Military): 0957	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70°	Rainfall (in.): Last 24 hours: None	Last 48 hours: NONE	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 9	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 16"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☒	☐ Excessive ☒ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: [illegible] OF110 [illegible]	
Today's date: 10/5/17		Time (Military): 1002	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: none	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 9 (1 pipe pictured)	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☒ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12" (both pipes)	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☒ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☒ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume	1	Liter	Bottle
	Time to fill	3	(Sec)	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature		22.41	°F	Thermometer
pH		7.89	pH Units	Test strip/Probe
Ammonia		0	mg/L	Test strip
Chlorine		0.4	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☑	☑ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF05	
Today's date: 10/5/17		Time (Military): 1012	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: none	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 10	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☒ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 38" 31" high	In Water: ☐ No ☐ Partially ☒ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*			standing water	
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth	0"	In	Tape measure
	Flow width	____' 0"	Ft, In	Tape measure
	Measured length	____' 0"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF011SW	
Today's date: 10/5/17		Time (Military): 1020	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: none	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 11	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Storm drain grate

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☒ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 26" x 13"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF013SW	
Today's date: 10/5/17		Time (Military): 1036	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: none	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: ~~12~~ NO Photo	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 33"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF012SW	
Today's date: 10/5/17		Time (Military): 1031	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: NM	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 13	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Storm grate, cannot record flow. Cannot assess water quality

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 32"	In Water: ☐ No ☐ Partially ☒ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☒ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☒ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: ~~OF 13~~ OF07	
Today's date: 10/5/17		Time (Military): 1100	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70°	Rainfall (in.): Last 24 hours: none	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 14	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☑ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☑ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☑ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: ~53"	In Water: ☐ No ☐ Partially ☑ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☒ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth	4"	In	Tape measure
	Flow width	~~__' 9~~" ~48"	Ft, In	Tape measure
	Measured length	2' ~~0~~"	Ft, In	Tape measure
	Time of travel	0	(S)	Stop watch
Temperature		21.00	°F	Thermometer
pH		7.92	pH Units	Test strip/Probe
Ammonia		(0)	mg/L	Test strip
Chlorine		0	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☒	☒ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☒ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF22 (pipe in woods)	
Today's date: 10/5/17		Time (Military): 1113	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: none	Last 48 hours: none	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: (Jessy's phone)	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF24 (in Pleasant Woods)	
Today's date: 10/5/17		Time (Military): 1121	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 70	Rainfall (in.): Last 24 hours: NO	Last 48 hours: NO	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 15	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): unable to measure flow due to root clusters inhibiting

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 36"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☒ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☒ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth	1"	In	Tape measure
	Flow width	___' 10"	Ft, In	Tape measure
	Measured length	___' 24"	Ft, In	Tape measure
	Time of travel	*would not travel*	S	Stop watch
Temperature		18.9	°F	Thermometer
pH		8.2	pH Units	Test strip/Probe
Ammonia (Stress)		0.5	mg/L	Test strip
Chlorine		0.03	mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Concrete on upper rim is chipping
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☒	☐ Excessive ☒ Inhibited	root cluster preventing flow from pipe
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch UN		Outfall ID: OF20	
Today's date: 10/5/17		Time (Military): 1139	
Investigators: KM JC		Form completed by: JC	
Temperature (°F): 75	Rainfall (in.): Last 24 hours: NO	Last 48 hours: NO	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 14	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: ~31"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF21 (grate on campus)	
Today's date: 10/5/17		Time (Military): 1153	
Investigators: KM JC		Form completed by: JC	
Temperature (°F): 75°	Rainfall (in.): Last 24 hours: NO	Last 48 hours: NO	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 17	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): grate

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 22"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF22 (grate on campus)	
Today's date: 10/5/17		Time (Military): 1200	
Investigators: KM/JL		Form completed by: JL	
Temperature (°F): 75	Rainfall (in.): Last 24 hours: NO	Last 48 hours: NO	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 18	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known): outfall description unknown. Storm drain cap could not open & was not able to see through

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 24"	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF67	
Today's date: 10/5/17		Time (Military): 1225	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 75°	Rainfall (in.): Last 24 hours: 0	Last 48 hours: 0	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 18 19	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): grate on campus

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 18"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF 68	
Today's date: 10/5/17		Time (Military): 1220	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 75	Rainfall (in.): Last 24 hours: NO	Last 48 hours: NO	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: ~~20~~ No photo	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Pipes

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 36"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Paint Branch		Outfall ID: OF 70	
Today's date: 10/5/17		Time (Military): 1230	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 75°	Rainfall (in.): Last 24 hours: 1.70	Last 48 hours: 1.70	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 21	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known): grate on campus, examined entrance of outfall

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☒ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 8" ↑ Pipe in drain	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully (1/2 way w/ leaves etc)
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*			Stagnant water	
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Guilford Run		Outfall ID: UF49	
Today's date: 10/5/17		Time (Military): 1338	
Investigators: KM JC		Form completed by: JC	
Temperature (°F): 80	Rainfall (in.): Last 24 hours: no	Last 48 hours: no	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 22	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☒ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☒ Corrosion	Corrosion of pipe on spillway
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Guilford Run		Outfall ID: OF10	
Today's date: 10/5/17		Time (Military): 1341	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 80	Rainfall (in.): Last 24 hours: no	Last 48 hours: no	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 23	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ **Closed Pipe**	☑ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☑ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 30"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☑	☐ Brown ☐ Orange ☑ Green ☑ Other:	Black

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

IDDE Outfall Inspection Form

Section 1: Background Data

Subwatershed: Guilford Run		Outfall ID: OF50	
Today's date: 10/5/17		Time (Military): 1351	
Investigators: KM/JC		Form completed by: JC	
Temperature (°F): 80	Rainfall (in.): Last 24 hours: no	Last 48 hours: no	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s: 24 No photo	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☒ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☒ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☒ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: 18"	In Water: ☐ No ☐ Partially ☒ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☒ No	*If No, Skip to Section 5*		RAIN Standing water	
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

IDDE OUTFALL INSPECTION FORM

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Maintenance Schedules

STORMWATER MAINTENANCE SCHEDULE
BIORETENTION

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Bioretention Basin	Seasonally and after a major storm		
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions, and inadequate dewatering of the facility.	The top three inches of soil should be removed and replaced with soil material as per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire filter and underdrain system may need maintenance. MDE approval may be necessary.
Mulch Layer		Check mulch for adequate cover, sediment accumulation, or discoloration.	Replace and remove old mulch and excess sediments. Provide adequate mulch cover according to approved design.
Vegetative Surfaces	Monthly		
Plant Composition and Health		Compare plant composition with approved plans. Check for invasive species or weeds. Check for dead or dying vegetation.	Remove and replace plants in accordance with plan specifications.
Vegetative Cover and Erosion		Check for evidence of erosion, runoff channelizing, or bare spots.	Re-seed or re-plant in accordance with approved landscaping plans. Re-grading may be required when concentrated flow causes rills or gullying through the facility.
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility must be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.
Structural Components	Annually	Check for evidence of structural deterioration, spalling, or cracking. Inlet and outlet structures must be in good condition.	Repair to good condition according to specifications on the approved plans.

STORMWATER MAINTENANCE SCHEDULE
BIORETENTION

Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.
		Riprap outlet must be maintained in good functional condition.	Repair according to approved plan.
Pretreatment Forebays	Seasonally and after a major storm		
Sediment Accumulation		Check for sediment accumulation in the forebay.	When the forebay depth is less than half the proposed design, sediment must be removed and the forebay restored according to the approved design.
Sand Layer		Check sand for staining and sediment accumulation	Replace first three inches of sand layer with sand materials per plan specifications.
Gravel Diaphragm		Check gravel diaphragm for sediment accumulation and evidence of erosion	Stabilize or replace gravel according to plan specifications.
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance	Stabilize and grade according to approved plan.
Overall Function of the Facility	Annually	Check that flow splitters are functioning as designed and that bypass is operating as designed.	Construction must be in accordance with approved plans.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications.

STORMWATER MAINTENANCE SCHEDULE
DRY SWALE

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Swale Surface	Seasonally and after a major storm		
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions and inadequate dewatering of the facility.	The top three inches of soil must be removed and replaced with soil material as per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire filter and underdrain system may need maintenance. MDE approval may be necessary.
Sediment Accumulation		Check for sediment accumulation on the filter bed.	Silt/sediment must be removed from the swale when accumulation exceeds (1) inch.
Check Dams or Energy Dissipaters		Check for evidence of flow cutting around the structure and evidence of erosion at the downstream toe.	Repair and re-grade as necessary to comply with approved plans.
Vegetative Surfaces	Monthly		
Vegetative Cover		Check for evidence of erosion and/or dead or dying vegetation in the swale or slopes.	Replace or remove plants in accordance with plan specifications.
Mowing		Grass in the swale must be maintained at a height of 4 to 6 inches.	Mow during the growing season to maintain the required height. Clippings must be removed.
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility must be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.
Structural Components	Annually	Check for evidence of structural deterioration, spalling, or cracking. Inlet and outlet structures in good condition.	Repair in good condition according to specifications on the approved plans.

STORMWATER MAINTENANCE SCHEDULE
DRY SWALE

Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.
		Riprap outlet must be maintained in good functional condition.	Repair according to approved plan.
Pretreatment Forebays	Seasonally and after a major storm		
Sediment Accumulation		Check for sediment accumulation in the forebay.	When the forebay depth is less than half the proposed design, sediments must be removed and the forebay restored according to the approved design.
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance.	Stabilize and grade according to approved plan.
Overall Function of the Facility	Annually	Check for evidence of flow bypassing the facility.	Construction must be in accordance with approved plans.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications.

STORMWATER MAINTENANCE SCHEDULE
WET SWALE

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Swale Surface	Seasonally and after a major storm		
Vegetation		Check for healthy vegetation and good cover. Check for evidence of erosion, bare spots or dead or dying vegetation.	Remove unwanted vegetation and re-seed or re-plant according to approved plan.
Sediment Accumulation		Check for excessive sediment in the open water areas causing disruption to flow.	Clean out sediments and restore elevations to approved plan design.
Wet Pool Elevations		Check that water levels and storage are in accordance with the approved design.	Sediments may need to be cleaned out to restore wet pool volume. If the facility is not functioning as designed, contact MDE for review and approval of field modifications.
Check Dams or Energy Dissipaters		Check for evidence of flow cutting around the structure, and evidence of erosion at the downstream toe.	Repair and re-grade as required to comply with approved plans.
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility must be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.
Structural Components	Annually	Check for evidence of structural deterioration, spalling or cracking. Outlet structure in good condition.	Repair to good condition according to specifications on the approved plans.
Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.
		Check that riprap outlet is maintained in good functional condition.	Repair in accordance with approved plan.
Pretreatment Forebays	Seasonally and after a major storm		
Sediment Accumulation		Check for sediment accumulation in the forebay.	When the forebay depth is less than half the proposed design, sediment must be removed and the forebay restored in accordance with the approved design.
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance.	Stabilize and grade according to approved plan.
Overall Function of the Facility	Annually	Check that flow conveyance is operating as designed.	Construction must be in accordance with approved plans.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications

STORMWATER MAINTENANCE SCHEDULE
SURFACE SAND FILTER

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Filter Surface	Seasonally and after a major storm		
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions and inadequate dewatering of the facility.	Remove the top three inches of sand and replace with sand material per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire filter and underdrain system may need maintenance. MDE approval may be necessary.
Sediment Accumulation		Check for sediment accumulation on the filter bed.	Silt/sediment must be removed from the filter bed when accumulation exceeds 1 inch.
Vegetative Surfaces	Monthly		
Vegetative Cover		Check for evidence of erosion and dead or dying vegetation on the filter or slopes.	Remove and replace plants in accordance with plan specifications.
Mowing		Grass on the filter must be maintained in good condition and be less than 12 inches in height.	Mow during the growing season to maintain the required height. Clippings must be removed.
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility must be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.
Structural Components	Annually	Check for evidence of structural deterioration, spalling, or cracking. Outlet structure must be in good condition.	Repair to good condition in accordance with specifications on the approved plans.
Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.
		Check that riprap outlet is maintained in good functional condition.	Repair according to approved plan.

STORMWATER MAINTENANCE SCHEDULE
SURFACE SAND FILTER

Pretreatment Forebays	Seasonally and after a major storm		
Sediment Accumulation		Check for sediment accumulation in the forebay.	When the forebay depth is less than half the proposed design, sediment must be removed and the forebay restored in accordance with the approved design.
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance.	Stabilize and grade according to approved plan.
Overall Function of the Facility	Annually	Check that flow splitters are functioning as designed and that bypass is operating as designed.	Construction must be in accordance with approved plans.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications.

STORMWATER MAINTENANCE SCHEDULE
UNDERGROUND SAND FILTER

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Filter Chambers	Seasonally and after a major storm		
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions and inadequate dewatering of the facility.	Remove the top three inches of sand and replace with sand material as per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire filter and underdrain system may need maintenance. MDE approval may be necessary.
Water Holding Chambers		Check for evidence of leakage. Chambers should be holding water at normal pool elevation.	Repair to achieve operation in accordance with the approved plans.
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility shall be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.
Structural Components	Annually	Check for evidence of structural deterioration, spalling, or cracking. Outlet structure must be in good condition.	Repair to good condition according to specifications on the approved plans.
Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.
		Check that riprap outlet is in good functional condition.	Repair according to approved plan.
Pretreatment Forebays	Seasonally and after a major storm	Check for sediment accumulation in the forebay.	When sediment accumulates to 6 inches in depth, the pretreatment chamber must be cleaned out. Removed sediment and sediment laden water must be disposed in an approved location.
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance.	Stabilize and grade according to approved plan.
Overall Function of the Facility	Annually	Check that flow splitters are functioning as designed and that bypass is operating as designed.	Construction must be in accordance with approved plans.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications.

STORMWATER MAINTENANCE SCHEDULE
INFILTRATION TRENCH

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Filter Surface	Seasonally and after a major storm		
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions and inadequate dewatering of the facility.	Remove the top three to six inches of stone and replace with stone material per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire facility may need maintenance. Contact MDE.
Cleanouts/ Observation wells		Check operation. Check sediment accumulation.	Repair in accordance with the approved plans.
Sediment Accumulation		Check for sediment accumulation on the trench surface.	Silt/sediment must be removed from the stone when accumulation exceeds 1 inch.
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility must be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.
Structural Components	Annually	Check for evidence of structural deterioration, spalling, or cracking. Inlet and outlet structures must be in good condition.	Repair to good condition in accordance with specifications on the approved plans.
Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.
		Check that Riprap outlet is in good functional condition.	Repair in accordance with approved plans.
Pretreatment Forebays	Seasonally and after a major storm		
Sediment Accumulation		Check for sediment accumulation in the forebay.	When the forebay depth is less than half the proposed design, sediment must be removed and the forebay restored in accordance with the approved design.
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance.	Stabilize and grade in accordance with the approved plan.
Overall Function of the Facility	Annually	Check that flow splitters are functioning as designed and that bypass is operating as designed.	Construction must be in accordance with approved plans.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications.

STORMWATER MAINTENANCE SCHEDULE
INFILTRATION BASIN

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Riser and Outlet Structure	Seasonally and after a major storm		
Debris Present		Check for trash, debris, and/or sediment clogging all openings.	Trash, debris, and sediment must be disposed of in an acceptable manner according to current regulations.
Trash Racks		Check condition.	Repair or replace in good condition.
Cleanouts/Observation Wells		Check operation. Check sediment accumulation.	Repair in accordance with approved plans.
Riser and Barrel		Check for evidence of cracks, spalling, joint failures, water tightness, seepage around spillway pipe, and water tightness.	Repair in accordance with approved plans.
Vegetation		Check for excessive vegetation blocking orifice openings. Woody vegetation shall be less than 5 feet from the barrel and less than 25 feet from the riser	Remove vegetation and roots as necessary.
Other Structural Components		Check for missing manhole covers, grates, concrete, and structural integrity.	Repair in accordance with the approved plans.
Pond Outlet	Annually		
Debris		Check for trash and debris in and around the outlet.	Trash, debris, and sediment must be disposed of in an acceptable manner according to current regulations.
Riprap Protection		Check for displacement, blow outs, stable conveyance, and erosion below the outlet	Repair and restore function in accordance with the approved plans.
Abutment Contacts		Check for erosion, cracks, and seepage	Repair as needed.
Embankment	Annually		
Vegetation		Check that there is no woody vegetation on embankment and ground cover is in good condition. Check for wetland type vegetation.	Remove woody vegetation as necessary. Re-seed bare areas according to plan stabilization requirements. Presence of wetland vegetation on the embankment may indicate seepage and structural integrity concerns.

STORMWATER MAINTENANCE SCHEDULE
INFILTRATION BASIN

Embankment Integrity		Check upstream face and downstream face for soft spots and boggy areas, boils at the toe, settlements, depressions and bulges, signs of erosion, animal burrows, slope failures, and seepage.	Repair and stabilize in accordance with the approved plans. MDE Sediment and Stormwater Plan Review Division must be contacted for review and approval of any major pond repairs.
Basin Area	Annually		
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions and inadequate dewatering of the facility.	Remove the top three to six inches of soil/sediments and replace with approved infiltratable material per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire facility may need maintenance. Contact MDE.
Vegetation		Check for invasive and undesirable species, algae, and dead or dying vegetation.	Remove unwanted vegetation and re-seed or re-plant in accordance with the approved plan.
Mowing		Check that grass on the filter bed is maintained in good condition and is less than 12 inches in height.	Mow during the growing season to maintain the required height. Clippings must be removed.
Debris		Check for trash and debris in and around the outlet.	Trash, debris, and sediment must be disposed of in an acceptable manner according to current regulations.
Inlet Conveyance Systems	Annually		
Endwalls/Headwalls		Check for erosion, cracks, and seepage.	Repair as needed.
Open Channels		Check for erosion, blockages, and stable conveyance.	Repair as needed.
Riprap Protection		Check for displacement, blow outs, unstable conveyance, and erosion below the outlet.	Repair and restore function in accordance with the approved plans.
Pretreatment Forebays	Annually		
Sediment Accumulation		Check for sediment accumulation in the forebay.	Clean out the forebay when depth is less than 50% of the design depth. Restore to approved plan design.
Vegetation		Check for presence of algae and unwanted vegetation.	Remove unwanted vegetation and re-seed or re-plant in accordance with the approved plan.

STORMWATER MAINTENANCE PLAN
INFILTRATION BASIN

Emergency Spillway	Annually		
Spillway channel		Check for evidence of erosion, soft or wet areas, or obstructions to stable conveyance.	Stabilize erosion and remove obstructions as necessary.
Vegetation		Check for presence of excessive vegetation obstructing flow or trees in the conveyance channel.	Mow or remove trees as necessary.
Maintenance Access	Annual		
General		Check for accessibility to pond and riser, excessive vegetation growth and erosion on the access road	Repair and maintain access road in good condition
Overall Function of the Facility	Annual	Check aesthetics, and unpleasant odors	Contact MDE for concerns regarding pond function and performance

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications.

STORMWATER MAINTENANCE SCHEDULE
PONDS

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Principal Spillway	Seasonally and after a major storm		
Debris and Trash		Check for trash, debris, and sediment clogging at all openings.	Remove debris. Trash and debris must be disposed of in an acceptable manner according to current regulations.
Trash Rack		Check condition.	Repair or replace to good working condition.
Pond Drain		Check operation. Keep drain chained and locked.	Repair according to the approved plans.
Riser and Barrel		Check for evidence of cracks, spalling, joint failures, and seepage around spillway pipe. Water tightness is necessary.	Repair to achieve operation in accordance with the approved plans.
Vegetation		Check for excessive vegetation blocking orifice openings. Woody vegetation must be less than 5 feet from the barrel and less than 25 feet from the riser.	Remove vegetation and roots as necessary.
Other structural components		Check for missing manhole covers or inlet grates. Check for concrete and structural integrity.	Repair according to the approved plans.
Pond Outlet	Seasonally and after a major storm		
Debris and Trash		Check for trash and debris in and around the outlet.	Remove trash and debris.
Riprap Outlet Protection		Check for displacement, blow outs, and erosion below the outlet. Stable conveyance must be provided.	Repair and restore function in accordance with the approved plans.
Abutments		Check for erosion, cracks, and seepage.	Repair as needed.
Pond Embankment	Annually		
Vegetation		Check that there is no woody vegetation on embankment and ground cover is in good condition. Check for wetland type vegetation.	Remove woody vegetation as necessary. Re-seed bare areas according to plan stabilization requirements. Presence of wetland vegetation on the embankment may indicate seepage and structural integrity concerns.
Embankment Integrity		Check upstream face and downstream face for soft spots and boggy areas, boils at the toe, settlements, depressions and bulges, signs of erosion, animal burrows, slope failures, and seepage.	Repair and stabilize in accordance with the approved plans. MDE Sediment and Stormwater Plan Review Division must be contacted for review and approval of any major pond repairs.

STORMWATER MAINTENANCE SCHEDULE
PONDS

Pool/Basin Area	Annually		
Permanent Pool		Check sediment accumulation, stagnant pool areas, and isolated pond areas.	Clean out sediments and restore elevations to approved plan design.
Vegetation		Check for invasive and undesirable species, algae, and dead or dying vegetation.	Remove unwanted vegetation, and re-seed or re-plant according to approved plan.
Debris and Trash		Check for trash and debris in and around the outlet.	Remove debris.
Pond Inlet Conveyance Systems	Seasonally and after a major storm		
Endwalls/Headwalls		Check for erosion, cracks, and seepage.	Repair as needed.
Open Channels		Check for erosion, blockages, and stable conveyance.	Repair as needed.
Riprap Protection		Check for displacement, blow outs, unstable conveyance, and erosion below the outlet.	Repair and restore function in accordance with the approved plans.
Forebays and Micropools	Seasonally and after a major storm		
Sediment Accumulation		Check for sediment accumulation in the forebay.	Clean out the forebay when depth is less than 50% of the design depth. Restore to approved plan design.
Vegetation		Check for presence of algae and unwanted vegetation.	Remove unwanted vegetation and re-seed or re-plant according to approved plan.
Emergency Spillway	Annually		
Spillway Channel		Check for evidence of erosion, soft or wet areas, or obstructions to stable conveyance.	Stabilize erosion and remove obstructions as necessary.
Vegetation		Check for presence of excessive vegetation obstructing flow or trees in the conveyance channel.	Mow or remove trees as necessary.
Maintenance Access	Annually		
General		Check for accessibility to pond and riser.	Prevent excessive vegetative growth and erosion on the access road. Repair and maintain access road in good condition.
Overall Function of the Facility	Annually	Check aesthetics and unpleasant odors.	Contact MDE for concerns regarding pond function and performance.

STORMWATER MAINTENANCE SCHEDULE
PONDS

Stormwater Wetlands	Annually		
Vegetation		Check for unhealthy vegetation and unwanted species.	Remove unwanted vegetation and re-seed or re-plant according to approved plan.
Sediment Accumulation		Check for excessive sediment in the wetland area.	Clean out sediment and restore elevation to approved plan design.
Wetland Pool Elevations		Check for adequate water volume, sustained wet conditions, varied pond depths, and seasonal depth fluctuations.	Regrading in wetland may be necessary. Contact MDE to restore wetland function to approved design.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval of proposed modifications.

STORMWATER MAINTENANCE SCHEDULE
ENVIRONMENTAL SENSITIVE DESIGN

Practice	Frequency of Inspection	Preventive Maintenance	Maintenance Requirements
Green Roofs	Seasonally (and after a major storm)		Provide periodic irrigation, weeding, fertilizing, and in-fill planting as needed.
			Clean associated drainage pipes, inlets, stone edge drains, and other structures draining to/from practice.
Permeable Pavements	Seasonally (and after a major storm)	Prevent trucks and other heavy vehicles from tracking, spilling, or grinding material onto permeable pavement.	Sweep and vacuum to reduce sediment accumulation and ensure surface porosity. Do not use washing systems or compressed air units for surface cleaning. Clean out associated
		Use only non-toxic and organic deicers in moderation and apply as either calcium magnesium acetate or pretreated salt.	Clean associated drainage pipes, inlets, stone edge drains, and other structures draining to/from practice.
		Plow snow carefully with blades set one-inch higher than normal. Do not direct plowed snow piles or snowmelt to permeable pavement.	
Reinforced Turf	Seasonally (and after a major storm)	Prevent trucks and other heavy vehicles from driving on turf.	Mow regularly and remove clippings from application area.
			Clean associated drainage pipes, inlets, stone edge drains, and other structures draining to/from practice.
Rainwater Harvesting (Cisterns and Rain Barrels)	Seasonally (and after a major storm)	Disconnect, drain, and clean above ground systems at the start of winter.	Check underground connections during winter for frozen lines and ice blockages.
			Clean leaf screens, gutters, and downspouts to prevent clogging.
			Clean storage tank lids and mosquito screens.
			Replace damaged components as necessary.

STORMWATER MAINTENANCE SCHEDULE
ENVIRONMENTAL SENSITIVE DESIGN

Submerged Gravel Wetlands	Seasonally (and after a major storm)		Remove any dead or dying vegetation and revegetate.
			Remove accumulated sediment from pretreatment areas.
			Clean inlets and outlets of sediment, debris, and trash.
			Repair erosion at inflow points.
			Check that flow splitters are functioning as designed.
			Signs of uneven flow distribution may indicate that the gravel or underdrain is clogged. Remove, clean, and replace gravel.
Landscape Infiltration	Seasonally (and after a major storm)		Irrigate during prolonged dry periods.
		If specific plants are not surviving, replace with more appropriate species.	Remove any dead or dying vegetation and revegetate.
			Prune vegetation occasionally.
			Remove accumulated sediment from pretreatment areas. Replace top 2 to 3 inches of surface layer as needed.
			If water ponds for more than 48 hours or there is algal growth on the surface, remove and replace the top few inches of planting soil.
			If standing water persists after filter media has been maintained, the gravel, soil, and sand may need to be cleaned and/or replaced.
Infiltration Berms	Seasonally (and after a major storm)		Maintain a dense mat of vegetation. Remove any dead or dying vegetation and revegetate.
			Regrade any areas showing signs of concentrated flow to promote sheetflow.
			Repair erosion.

STORMWATER MAINTENANCE SCHEDULE
ENVIRONMENTAL SENSITIVE DESIGN

Dry Wells	Annually		Clean associated drainage pipes, gutters, downspouts, screens, and other components draining to practice.
			If water ponds for more than 48 hours or more than 6 inches of sediment has accumulated, excavate and replace the gravel media.
Micro-Bioretention	Seasonally (and after a major storm)		Irrigate during prolonged dry periods.
		If specific plants are not surviving, replace with more appropriate species.	Remove any dead or dying vegetation and revegetate.
			Prune vegetation occasionally.
			Remove accumulated sediment from surface of filter bed when accumulation exceeds one inch.
			If water ponds for more than 48 hours, remove and replace the top few inches of filter media.
			Replace mulch annually where practice treats areas with high concentrations of heavy metals. Otherwise, replace top 2-3 inches as necessary.
Rain Gardens	Seasonally (and after a major storm)		Irrigate during prolonged dry periods.
		If specific plants are not surviving, replace with more appropriate species.	Remove any dead or dying vegetation and revegetate.
			Prune vegetation occasionally.
			Remove accumulated sediment from surface of bed as needed.
			If water ponds for more than 48 hours, remove and replace the top few inches of planting soil.

STORMWATER MAINTENANCE SCHEDULE
ENVIRONMENTAL SENSITIVE DESIGN

			Replace mulch annually where practice treats areas with high concentrations of heavy metals. Otherwise, replace top 2-3 inches as necessary.
Swales	Biannually		Mow grass swales at least twice a year.
			Irrigate during prolonged dry periods.
			Remove sediment, debris, and trash.
			Re-seed sparsely vegetated areas to maintain dense coverage.
			Repair erosion on bottom, side slopes, and inlets. Stabilize.
			If water ponds for more than 48 hours, till bottom soil and revegetate.
			Assess performance of facility and maintain the following as as necessary: slope integrity, vegetative health, soil stability, compaction, erosion, ponding, and sedimentation.
Enhanced Filters	Annually		Implement maintenance requirements of primary practice.
			If the observation well holds water for more than 48 hours, remove and clean or replace media.

* Field conditions may require a modification to the original approval in order to achieve the intended design function. Contact MDE's Sediment and Stormwater Management Plan Review Division at 410-537-3563 for review and approval for all proposed modifications.

SWM Facilities Maintenance FY 2016/2017

Monday, October 17, 2016 10:27 AM

In March 2016 Stormwater maintenance, LLC began work on 26 facilities:

- **9 Ponds:** LPS, Xfinity 1, Xfinity 2, Neutral Buoyancy, Terrapin Trail Garage, Lot 2, Metzerott Rd., Shuttle Bus, and The Clarice.
- **14 Bioretention Cells:** Lot UU 1, Lot UU 2, Regents Dr. 1, Regents Dr. 2, Golf Course, Softball Field, Paint Branch Dr., Lot 11b 1, Lot 11b 2, Prince Frederick 1, Prince Frederick 2, Stadium Dr., CLG Swale.
- **2 Wet Swales:** Neutral Buoyancy, Artificial Turf
- **1 Sand Filter:** Peace Garden.

PONDS

Vegetation around the embankment on all ponds, with the exception of The Clarice, was mowed and cleared. A 2' to 3' vegetative buffer remains around water line to ensure sediment and erosion control. Small trees (6" dia. or less) have been cut and removed to discourage tree growth on embankments. Herbicide treatments were performed to control cattail and phragmites growth which is overtaking many permanent pond facilities.

Trash remains at TT Garage, and Xfinity 2 pond, even after work performed. Inlets and outfall structures remain blocked with sediment and/or plant material. Algae present in TT Garage and Metzerott Rd. ponds. Substantial cattails in The Clarice, LPS, Neutral Buoyancy and Shuttle Bus ponds.

BIORETENTION

Vegetation has been removed in all treated cells. Herbicide treatment performed in Lot UU 1 to control Phragmites. All cells were mowed or weed whacked to remove all vegetation. With the exception of Pr. Frederick 1 and 2, Stadium Dr. and CLG, this was appropriate maintenance, as no desirable plant material existed in the other facilities. Stadium Dr. and the CLG facilities contained desirable plants, but they were removed along with weeds and invasives. The required maintenance at CLG was discussed with the lead crew person, yet all plant material was removed from the swale cells.

Pr. Frederick received a soil test and assessment of the facility's function because cell 2 was not dewatering. It was discovered that the soil used was not the specified bio-mix, but something more like a topsoil. A geotextile liner was included between the soil and gravel layer, which may also be inhibiting percolation. Cattails have grown to a height of 10' and are crowding out desirable vegetation. Algae was observed growing in the standing water, even in February when the ambient temperature should have prevented growth. This suggests the presence of heated water entering the cell. A test pit was dug and then backfilled with washed gravel. Water exits the cell via this pit. As yet, no further maintenance has been performed at Pr. Frederick.

WET SWALES

The wet swales at Neutral Buoyancy and Artificial Turf Field were both chemically treated for cattails and phragmites, and vegetation was removed. Mowing occurred at Artificial Turf. Inlets and outfalls remain blocked with sediment and vegetation in both facilities. Further phragmites treatment required in Neutral Buoyancy swale, and possible dredging in both.

SAND FILTER

Invasive vegetation was removed around the southern edge of the pretreatment cell, and cattails removed from flow splitter. Sediment remains an issue in the flow splitter, limiting capacity and directing water to bypass treatment. Cattails remain in the pretreatment cell, and invasives exist around the north side of pretreatment and the sand filter.

A volunteer group of 15 students from the Incentive Award Program weeded the filter bed, removing vegetation by hand from the facility.

Facility ID	Location	Const. Year	Primary Ft Type	Secondary Ft Type	MDE Permit #	Comments	DA	Imp. Area	FACID	Feature Area (SqFt)
SWF130	By fountain infront of Kirwan Hall		Permeable Pavement			Observed to be pervious in field. No drawings found to date.			1	411.1
SWF129	North side of Reckord Armory	2015	Rain Garden			Built as part of sustainability fund student project				622.1
SWF128	Paint Branch Dr & Rossborough Ln		Bioretention			No info is avail., but it is on UMD and appears to drain UMD property.				1573.8
SWF127	Paint Branch Dr & Rossborough Ln		Bioretention			No info is avail., but it is on UMD and appears to drain UMD property.				2356.3
SWF125	Prince Frderick Hall Bioretention Cell 2	2014	Bioretention							787.6
SWF124	Prince Frederick Hall Bioretention Cell 1	2014	Bioretention							358.2
SWF123	Guilford Run		Swale						12	1502.6
SWF114	Shuttle Bus		Swale	Dry Swale					7	623.3
SWF113	Courtyard Parking Lot North Bioswale		Swale			Outfall for LPS Pond				12528.1
SWF63	Vet Med Parking Swale		Swale	Bio-Swale		see notes other swale pond				1824.8
SWF64	Vet Med Parking Swale		Swale	Bio-Swale		see other notes swale/pond				4297.2
SWF69	Courtyards Northeast Parking		Bioretention			sheet flow to bioretention				2096.2
SWF68	Courtyards Northeast Parking		Bioretention			sheet flow to bioretention curb at north edge collapsed				1692.9
SWF109	Metzerott Rd. and Greenmead Dr.		Pond							11506.0
SWF67	Courtyards Northeast Parking		Wetland			sheet flow from parking lot. no curb, flows to wooded wetland				10722.1
SWF11	CSPAC retention pond		Pond			High habitat value. Many species of Birds observed.				36335.4
SWF143	Central Animal Resources Facility & ENST		Permeable Pavement							1667.3
SWF141	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	574.0
SWF140	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	564.4
SWF139	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	559.7
SWF138	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	557.0
SWF137	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	566.3
SWF136	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	569.0
SWF135	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	568.7
SWF134	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	567.2
SWF133	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	568.5
SWF142	Kim Plaza		Bioretention			Final design drawings available. Searching for Record Drawings.			2	2824.0
SWF132	By fountain infront of Kirwan Hall		Permeable Pavement			Observed to be pervious in field. No drawings found to date.			1	418.6
SWF131	By fountain infront of Kirwan Hall		Permeable Pavement			Observed to be pervious in field. No drawings found to date.			1	1010.0
SWF107	Taylor Stadium		Bioretention							1518.0
SWF94	Paint Branch Drive Bioretention	2004	Bioretention	Micro-Bioretention		Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)				1987.0
SWF93	Regents Drive Bioretention	2004	Bioretention	Micro-Bioretention		Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)				2433.8
SWF92	Lot 9 Bioretention	2004	Bioretention	Micro-Bioretention		Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)				3666.5
SWF91	Regents Drive Bioretention	2004	Bioretention	Micro-Bioretention		Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)				1311.6
SWF85	Washington Quad		Rainwater Harvesting	Cistern						2387.5
SWF23	BioEngineering		Swale	Bio-Swale		Vegeted swale, probable wetland.				4218.7
SWF66	Greenmeade North		Swale	Bio-Swale		Grass swale. Opportunity for enhanced treatment wih bioretention retrofit.				3288.4
SWF57	Lot 2 retention pond overflow		Swale	Bio-Swale		Pond overflowto linear channel. Heavy vegetation some trash. Check design docs for intended function				11184.6

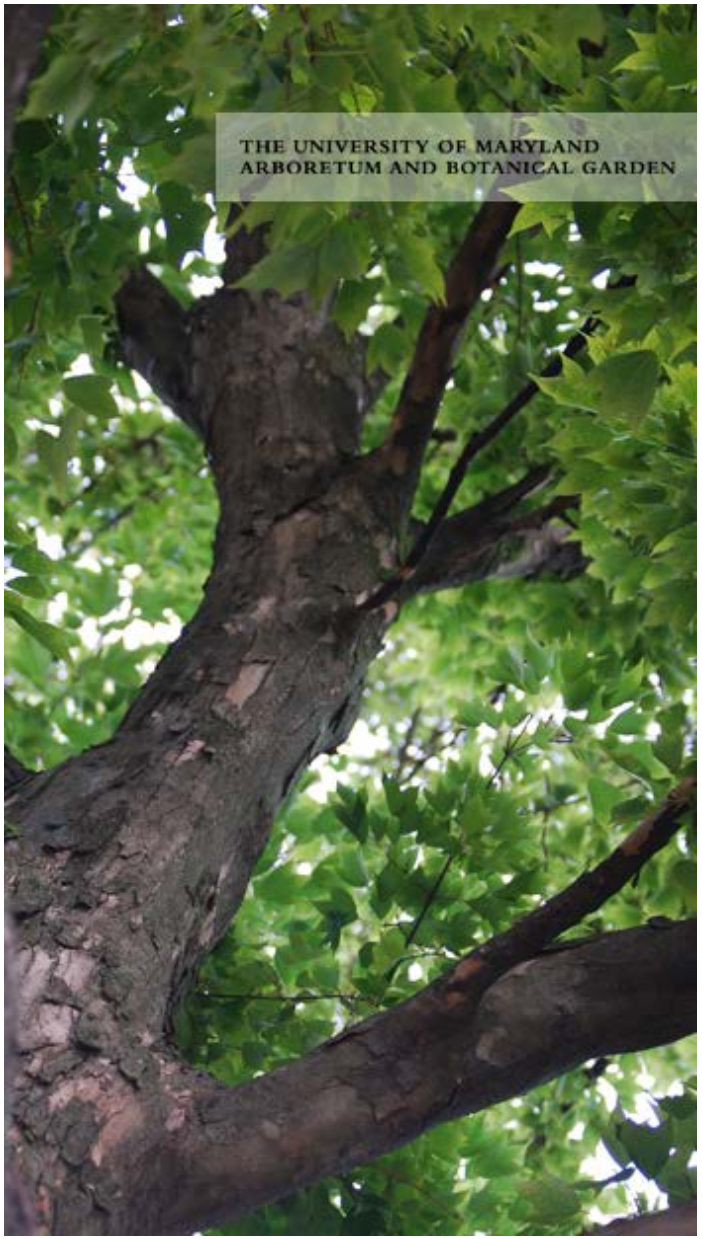
Facility ID	Location	Const. Year	Primary Ft Type	Secondary Ft Type	MDE Permit #	Comments	DA	Imp. Area	FACID	Feature Area (SqFt)
SWF3	Lot 11b		Swale	Dry Swale		Inlet/channel to research rain gardens. clogged with trash and sediments. Fencing around facility is damaged.				124.9
SWF37	Lot Three (Guilford Park Bioretention)	2001	Swale	Dry Swale		Lower Guilford Bioretention riprap overflow.			12	2880.9
SWF40	University House	2012	Bioretention		11-SF-0184	Bioretention South				1419.1
SWF41	University House	2012	Bioretention		11-SF-0184	Bioretention South				2791.3
SWF75	Denton		Permeable Pavement			Service parking permeable paving.				677.7
SWF112	Golf Course Parking Lot		Bioretention			Bioretention discovered during inspection of Golf Course Rd. drainage swale-December 2014				1519.2
SWF80	Lot FF2		Permeable Pavement			Dr. Davis permeable paving research with treatment vault for nitrogen reduction.				1780.1
SWF27	Lot PP2 Bioretention	2004	Bioretention	Micro-Bioretention		Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)				2724.5
SWF108	Chesapeake Parking Lot East		Sand Filter	derground Sand Feature		storm vault unknown type.				349.2
SWF95	Peace and Friendship Garden	2003	Infiltration Practice		02-SF-0247				11	12597.4
SWF82	Knight Hall		Rainwater Harvesting	Cistern						2178.3
SWF48	Symons Hall		Permeable Pavement							2179.4
SWF46	Symons Hall		Rain Garden							375.2
SWF47	Symons Hall		Rain Garden							371.0
SWF7	Peace and Friendship Garden	2003	Dry Well		02-SF-0247	Flowsplitter Structure with Gabion Inlet/Outfall Protection			11	353.5
SWF45	Corner of Campus and Presidential Drs.	2014	Infiltration Practice			Mulch spread on open area to keep stormwater from standing				1511.0
SWF19	University House Parking Lot		Bioretention			Facility outfall presents an issue with eroding the hillside.				2443.9
SWF38	Peace and Friendship Garden	2003	Non-Structural BMP		02-SF-0247	sand filter over flow			11	452.4
SWF5	Peace and Friendship Garden	2003	Sand Filter	Surface Sand Feature	02-SF-0247	Failed sand filter basis of UMD SWM Bank.			11	8038.5
SWF86	CSPAC		Permeable Pavement			CSPAC landscape service building permeable paving. Some weeds/sediment buildup in joints.				4297.6
SWF50	Cumberland		Green Roof			Central cell. largest of the 7.			8	4273.6
SWF52	Cumberland		Green Roof			mid northwest cell. Same as above			8	300.5
SWF53	Cumberland		Green Roof			mid northeast cell. Same.			8	222.6
SWF72	Cumberland		Green Roof			south cell. same condition as others.			8	501.0
SWF54	Cumberland		Green Roof			mid southwest cell. same condition as others.			8	358.7
SWF71	Cumberland		Green Roof			mid southeast cell. same condition as others.			8	329.9
SWF51	Cumberland		Green Roof			north cell. Per Res Facilities green roof maintenance covered under service contract. Supplemental irrigation for first 2 years.			8	441.5
SWF77	Public Health Garden		Rainwater Harvesting	Cistern						113.7
SWF76	Public Health Garden	2013	Swale	Bio-Swale	12-SF-0301	Water enters facility too rapidly, causing scouring and channeling of swale bays.				930.0
SWF78	Physical Science		Green Roof							12926.9
SWF49	Computer and Space Sciences		Green Roof							4103.5
SWF106	Shuttle Bus		Pond						7	1798.6
SWF98	Artificial Turf Field		Swale	Wet Swale						4822.8
SWF1	Paint Branch Drive drainage wet swale		Swale	Wet Swale		heavy vegetaion, needs maintenance				4014.6
SWF84	Paint Branch Drive drainage wet swale		Swale	Wet Swale		sedimentation and heavy vegetative growth needs maintenance				4536.5
SWF26	Shuttle Facility		Bioretention			Shuttle facility sand filter. Possibly constructed by SHA for mitigation				12958.0
SWF110	University House	2012	Swale	Dry Swale	11-SF-0184	Swale to North Bioretention Cells			10	797.3
SWF18	BLS Heavy Equipment		Green Roof			Green roof appears to be functional. Sedums in bloom. Some volunteer "weeds" should be removed.				3216.9
SWF55	Heavy Equipment Building		Bioretention			BLS Bioretention. no observed plants. room for enhanced planting.				952.8
SWF10	Laboratory for Physical Science	1991	Pond			heavy sedimentation. heavy cattail growth. nice wooded edge condition favorable wildlife habitat				5978.4
SWF89	Golf Course Pond (lower)		Pond			Dam failed years ago. No funding identifed for fix. Undermined condition presents safety hazard. Confirm status w/ course manager				77765.9
SWF83	Denton Hall		Rainwater Harvesting	Cistern						50.2
SWF8	Biomolecular Sciences drainage channel		Swale	Wet Swale		FF2 Overflow				3563.4
SWF56	Comcast north retention pond		Pond			Comcast/Chesapeake Pond. Reported problems with overflow during large rains events. Geese infestation.				26567.5

Facility ID	Location	Const. Year	Primary Ft Type	Secondary Ft Type	MDE Permit #	Comments	DA	Imp. Area	FACID	Feature Area (SqFt)
SWF43	Lot 11b	2003	Bioretention	Micro-Bioretention		Dr. Davis bioretention				310.6
SWF42	Wye Oak Building		Bioretention							691.5
SWF32	MFRI		Swale	Dry Swale		vegetated swale (volunteer?) between two storm pipes				2388.7
SWF31	MFRI		Wetland			wooded wetland at MFRI rip rap inlet from parking lot				17071.8
SWF30	MFRI		Swale	Wet Swale		wet swale at MFRI likely part of rail swm check row/easement/maintenance agreement				9094.4
SWF25	Paint Branch Drive drainage wet swale		Swale	Wet Swale		heavy vegetative growth				2242.8
SWF20	VetMed research pond		Pond			swale wraps lot. Heavy vegtation in swale, heavy sedimentation at inlets.				39399.0
SWF17	Shuttle Facility		Green Roof			same as lower roof				4856.2
SWF14	Woods Hall		Bioretention			Garden Area funde by AWS and DNR				1990.0
SWF13	Courtyards retention pond		Pond			sediments and trash at swale/inlet into pond				7154.2
SWF12	Softball Complex retention pond		Pond							12035.0
SWF36	Lot Three (Guilford Park Bioretention)	2011	Bioretention			Middle Guilford Bioretention.			12	2937.3
SWF90	Lot PP2 rain garden		Bioretention			Not a Dr. Davis facility. Need to find out more info on this. ID'd as a retrofit opportunity in AWRP.				12537.0
SWF81	Denton Hall		Rainwater Harvesting	Cistern						31.5
SWF74	Stamp Green Roof East		Green Roof			same as other stamp green roof verify LEED status				973.4
SWF73	Stamp Green Roof West		Green Roof			Good condition. verify LEED status				1292.5
SWF70	Denton		Bioretention			Rip rap at inlet should be lowered to allow greater volume to enter				739.1
SWF65	Greenmeade North		Pond			Dry detention pond? appears functional.				13150.7
SWF62	Lot 11b		Wetland			Wooded wetland area. Opportunity for enhanced filtration at edge/buffer. Check for trash				12093.1
SWF79	Glenn L Martin Hall		Permeable Pavement			Engineering permeable paving				619.9
SWF59	Denton Dining		Bioretention						6	841.1
SWF58	Denton Dining		Bioretention						6	519.2
SWF60	Denton Dining		Bioretention						6	494.6
SWF39	Chem-Nuc BLDG		Bioretention			North Cell			9	1787.2
SWF2	Lot 2 retention pond		Pond			Epply parking lot pond. With riprap overflow into vegetated swale. Check design docs.				4135.7
SWF24	Terrapin Trail Garage retention pond		Pond							8687.6
SWF88	Chem-Nuc BLDG		Bioretention			South Cell			9	762.3
SWF33	University House	2012	Bioretention		11-SF-0184	Bioretention North			10	1132.7
SWF34	University House	2012	Bioretention		11-SF-0184	Bioretention North			10	1269.1
SWF35	University House	2012	Bioretention		11-SF-0184	Bioretnetion North			10	1189.9
SWF16	Shuttle Facility		Green Roof			sedum green roof.				5431.4
SWF22	Lot 11b	2003	Bioretention	Micro-Bioretention		Dr. Davis bioretention				316.7
SWF21	Animal Science retention pond		Pond							18163.7
SWF151	Maryland Stadium		Underground Structural							71757.6
SWF149	Bob Turtle Smith Stadium at Shipley Field		Underground Structural							73894.1
SWF148	Metzerott Rd. and Greenmead Dr.		Swale							726.6
SWF122	Southwest corner of Denton Area Dining Hall		Bioretention							1651.6
SWF150	Edward St. John Learning and Teaching Center		Underground Structural							53779.6
SWF159	East Side of Edwards St. John	2017	Green Roof		14-SF-0181		1010	1010		1391.6
SWF158	West Side of Edward St. John	2017	Green Roof		14-SF-0181		2530	2530	15	2937.0
SWF157	West Side of Edward St. John	2017	Green Roof		14-SF-0181		2500	2500	15	2901.2
SWF144	North East corner of Golf Course Parking Lo	2016	Rain Garden			RG3. Built as part of CBT grant; built in-house by BLM; drawings consist of profile and plan view- no detail drawings were created; construction cost include all 3 facilities combined.	50700	15881		1222.7
SWF147	Southwest corner of Golf Course parking lot	2016	Swale	Grass Swale		Part of CBT grant; built in-house by BLM; drawings consist of profile & plan view- no detail drawings; constr'n cost include all 3 facilities combined. 6" Inflow pipe from swale is below grade. Little to no imperv. treatment. Intended to convey RO to RG2.		100	4	273.8
SWF153	Behind A.V. Williams	2017	Bioretention	Micro-Bioretention	16-SF-0064		14925	9477	13	775.8
SWF152	Behind A.V. Williams	2017	Bioretention	Micro-Bioretention	16-SF-0064		25448	16263	13	1653.2

Facility ID	Location	Const. Year	Primary Ft Type	Secondary Ft Type	MDE Permit #	Comments	DA	Imp. Area	FACID	Feature Area (SqFt)
SWF146	Southwest corner of Golf Course parking lot	2016	Rain Garden			RG2. Built as part of CBT grant; built in-house by BLM; drawings consist of profile and plan view- no detail drawings were created; construction cost include all 3 facilities combined. 6" Inflow pipe from swale is below grade.	13700	10187	4	1561.9
SWF146	East of Golf Course Driving Range	2016	Bioretention	Micro-Bioretention		RG1. Built as part of CBT grant; built in-house by BLM; drawings consist of profile and plan view- no detail drawings were created; construction cost include all 3 facilities combined. DA is just for facility, but swale add another 13550 sf.	5400	9828	3	1166.4
SWF145	West corner of Golf Course parking lot	2016	Swale	Grass Swale		Built as part of CBT grant; built in-house by BLM; drawings consist of profile and plan view- no detail drawings were created; construction cost include all 3 facilities combined. Swale assumed very little impervious area treatment.	13550	100	3	662.0
SWF154	Behind A.V. Williams	2017	Bioretention	Micro-Bioretention	16-SF-0064		23781	17396	13	1239.1
SWF155	West of Edward St. John	2017	Green Roof		14-SF-0181		1110	1110	14	864.7

Attachment J

University of Maryland – College Park
Campus Tree Management Plan 2012



I. Purpose and Objective

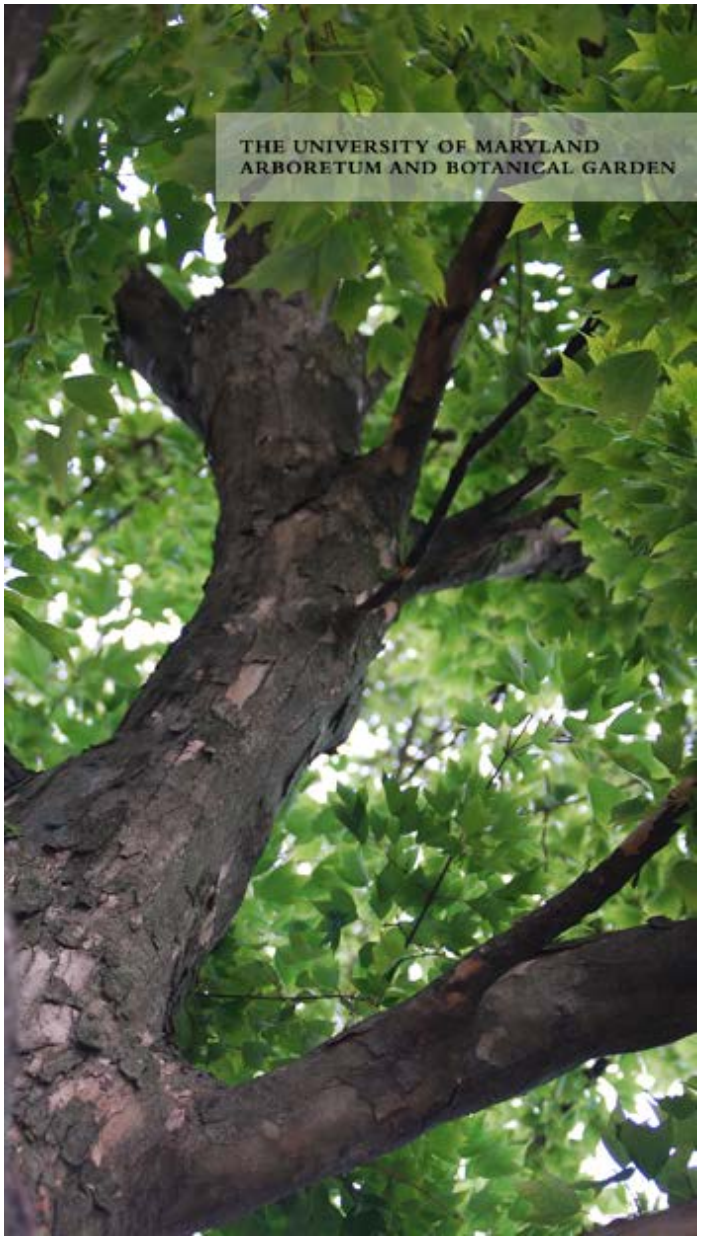
The University of Maryland – College Park has over 11,000 plants currently recorded in its GIS based inventory. These plants are the foundation of the campus landscape. The purpose of the Campus Tree Management Plan of 2012 is to support the Mission Statement of the Arboretum and Botanical Garden and sustain a healthy, attractive and safe environment for the people and plants that are present on the campus at any given time.

Mission Statement:

> "The University of Maryland campus is an Arboretum and Botanical Garden that strives to be an instrument of horticultural distinction, landscape design and interpretation and place-making reflecting the university's education, research and service missions. The Arboretum and Botanical Garden incorporates the diverse heritage landscapes of the campus from its beginnings as an agricultural college founded in 1856 to its current urban setting befitting a distinguished research university. Through exemplary practices of environmental stewardship, horticulture and urban forestry, the Arboretum and Botanical Garden will enhance the campus' aesthetic and promote awareness of conservation and preservation of our natural environment for the enrichment of the university community, the citizens of Maryland and our visitors."

II. Responsible Department/ Governance

Facilities Management through the Division of Landscape Services accepts the responsibility to monitor and manage the health and condition of campus trees including taking the necessary action when approved to remove large specimen trees on campus. The Campus Tree Care Program outlines steps taken in the care, and if needed, removal of trees.



III. Advisory Committee

The committee will consist of the following positions in Facilities Management (Assistant Director, Arboretum/Horticultural Services – Chair; Director, Building and Landscape Services; Assistant Director, Landscape Services; Director, Facilities Planning, Coordinator, Campus Planning; Campus Landscape Architect) as well as representatives from the Department of Plant Science and Landscape Architecture, Resident Facilities, Campus Recreation Services and the Office of Sustainability. At least one student representative and one community representative will be maintained and additional interested parties are welcome. Committee member meet on a monthly basis to review tree canopy developments and impacts, proposed projects, outreach and similar issues.

IV. Goals

A. Arboriculture Practices

I. Pruning Schedule

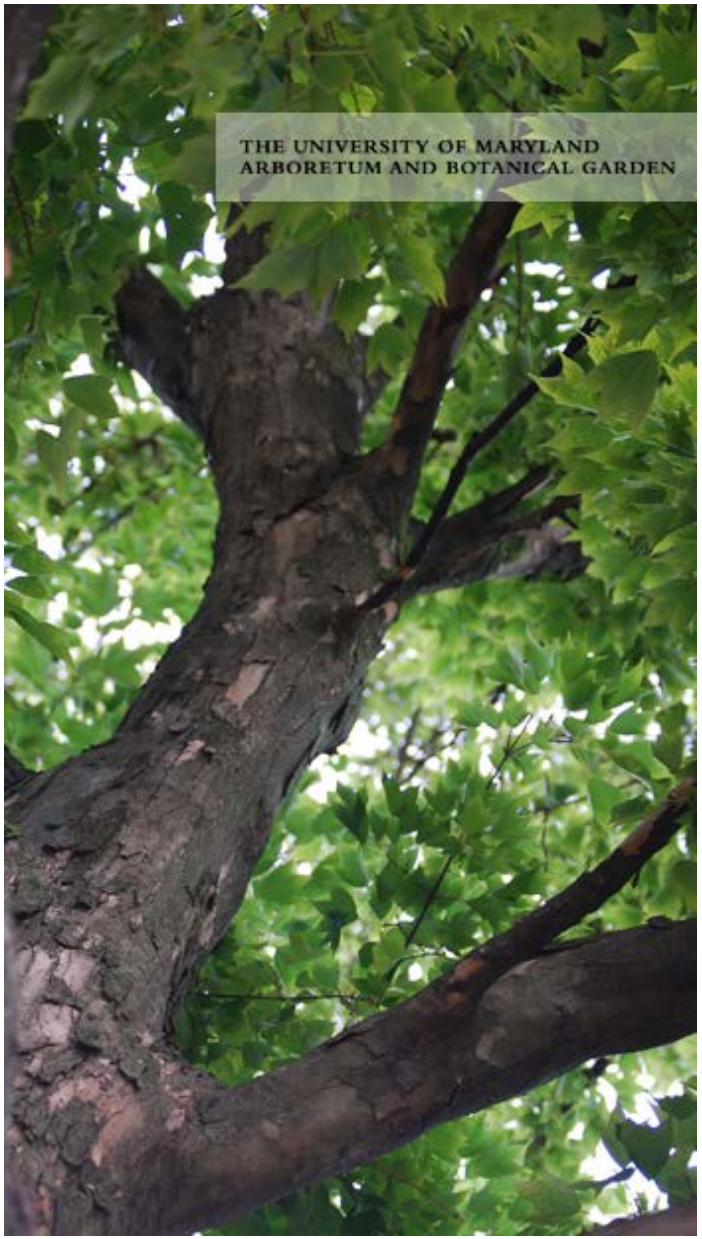
- The maintenance pruning schedule shall be dictated by tree species, age, function, and placement.
- Trees less than 7 years old should receive structural pruning on an annual or biennial basis
- Trees 7-20 years old should receive structural pruning every two to five years
- Trees 20 years old and older receive maintenance pruning every five to seven years to clean dead, diseased, dying, and defective branches from the crown
- Trees adjacent to roadways, walkways, signs, and street lights are annually inspected for safety and clearance issues and maintenance pruned as necessary

II. Pruning Practices

-To encourage the development of a strong, healthy tree, the following guidelines shall be followed when pruning.

a. General

- Pruning shall not be conducted without a clear objective or outcome.
- Prune first for safety, next for health, and finally for aesthetics.



When removing branches, the pruning cut shall not damage the branch bark ridge and branch collar.

- Internode (heading) cuts should not be used except in storm response and crown restoration procedures.

-Branch reduction or thinning should be used to achieve pruning objectives rather than making large (>8" diameter) branch removal cuts.

b .Cleaning

- Large branches should be removed with the aid of ropes and rigging equipment to minimize the risk of tree injury from falling debris.

- Assess how a tree will be pruned from the top down.

- Favor branches with strong, U-shaped angles of attachment. Remove branches with weak, V-shaped angles of attachment and/or included bark.

- Ideally, lateral branches should be evenly spaced on the main stem of young trees.

- Remove any branches that rub or cross another branch.

- Make sure that lateral branches are no more than one-half to three-quarters of the diameter of the main stem to discourage the development of co-dominant stems.

c. Thinning

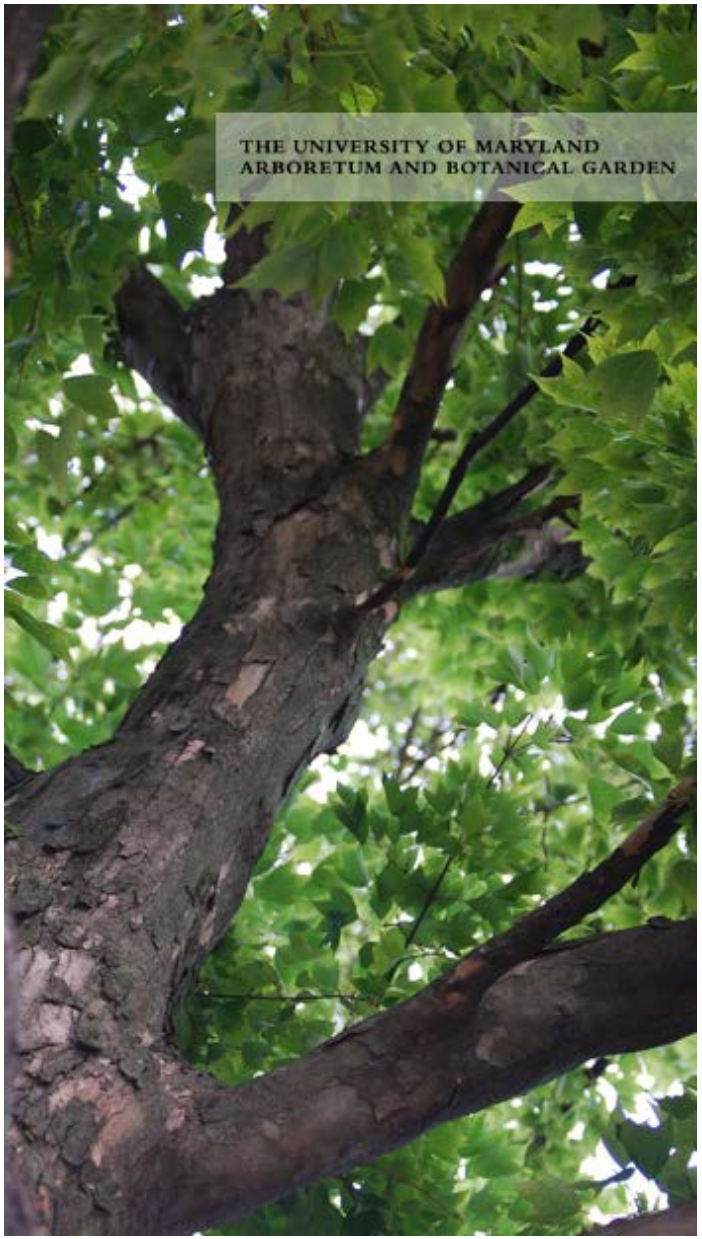
- Thinning shall be performed to reduce the density of branches, which increases light penetration, improves visibility, and decreases wind load.

- Do not remove more than one-quarter of the living crown of a tree at one time. If it is necessary to remove more, do it over successive years.

d. Raising

- Raising shall be performed to provide vertical clearance from thoroughfares, signs, street lights, and structures

- Always maintain live branches on at least two - thirds of a tree's total height. Removing too many lower branches will hinder the development of a strong main stem.



- Remove basal sprouts and vigorous epicormic sprouts.

e. Reduction

- Reduction shall be performed to decrease the overall height of a tree or to decrease the length of an individual branch.

- Use reduction pruning only when absolutely necessary. Make the pruning cut at a lateral branch that is a least one-third the diameter of the stem to be removed.

- If it is necessary to remove more than half of the foliage from a branch, remove the entire branch.

III. Planting

- Planting locations will be chosen with respect to potential longevity of the tree species, consistent with CPTED (crime prevention through environmental design) guidelines and utility right of ways as well as viewsheds, interaction with structures and relevance to landscape typologies and plant communities by campus district.

IV. Maintenance

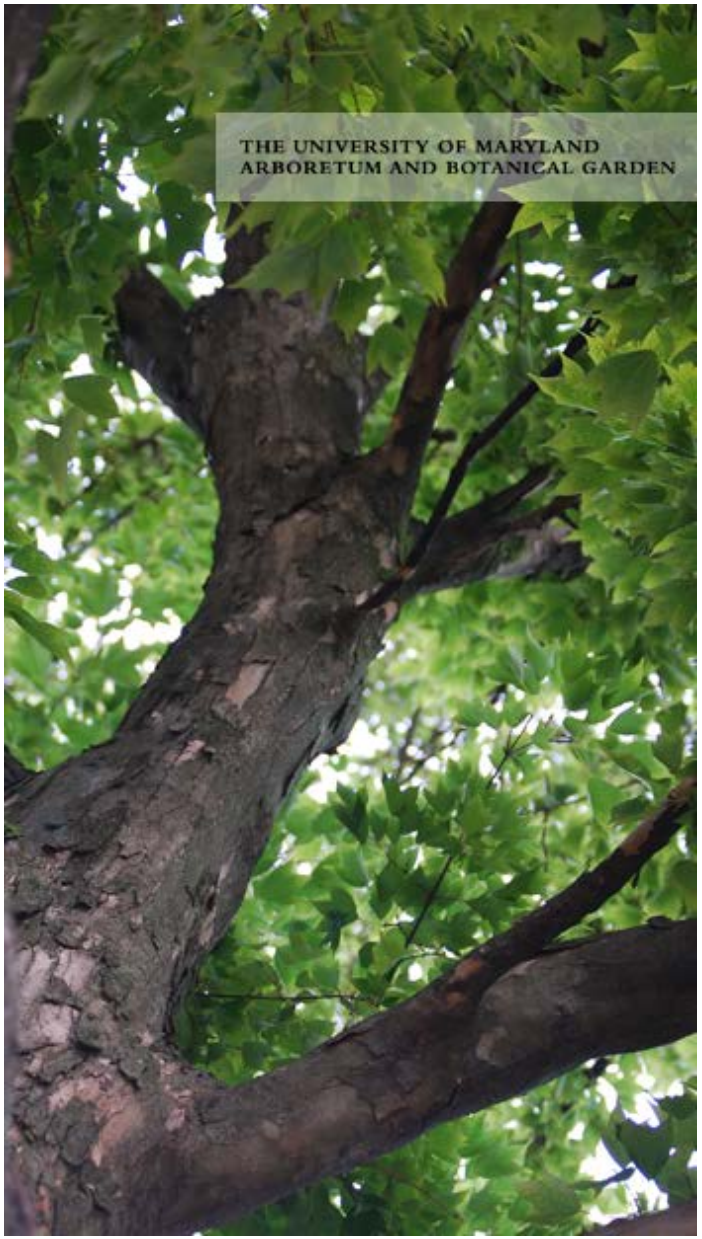
-Trees will be inspected on a continual basis by zone staff and IPM Specialist and any concerns addressed to the Campus Arborist promptly with regards to structural deficiency, nutrient deficiency, wounding or vandalism so inspection and remedial action can occur.

V. Removal

-Trees in the historic core of campus exceeding 20” diameter will require assessment by 2 independent arborists before removal will be considered. All other removals require permission of the Campus Arborist and the Assistant Director, Arboretum/Horticultural Services.

VI. Recommended and Prohibited Species

-The University of Maryland College Park campus holds an arboretum/ botanic garden and exemption to the Invasive Plant Policy of the State of Maryland however it follows the list of prohibited plants with respect to new plant installations. Current collections are evaluated on a tree by tree basis for replacement of individual specimens on this list. All new plant recommendations



are evaluated for invasive potential as well as value to the teaching collection, as well as relevance to LEED and Sustainable Sites Guidelines.

VII. Catastrophic Events

-Events such as hurricanes, tropical storms, blizzards, fires, tornados and other excessive wind events do occur from time to time and all effort will be made to protect the public safety during such events and to replant any lost trees or correct any damage resulting from such events. Response may include staff or contractor actions.

B. Damage Assessment, Enforcement and Penalties

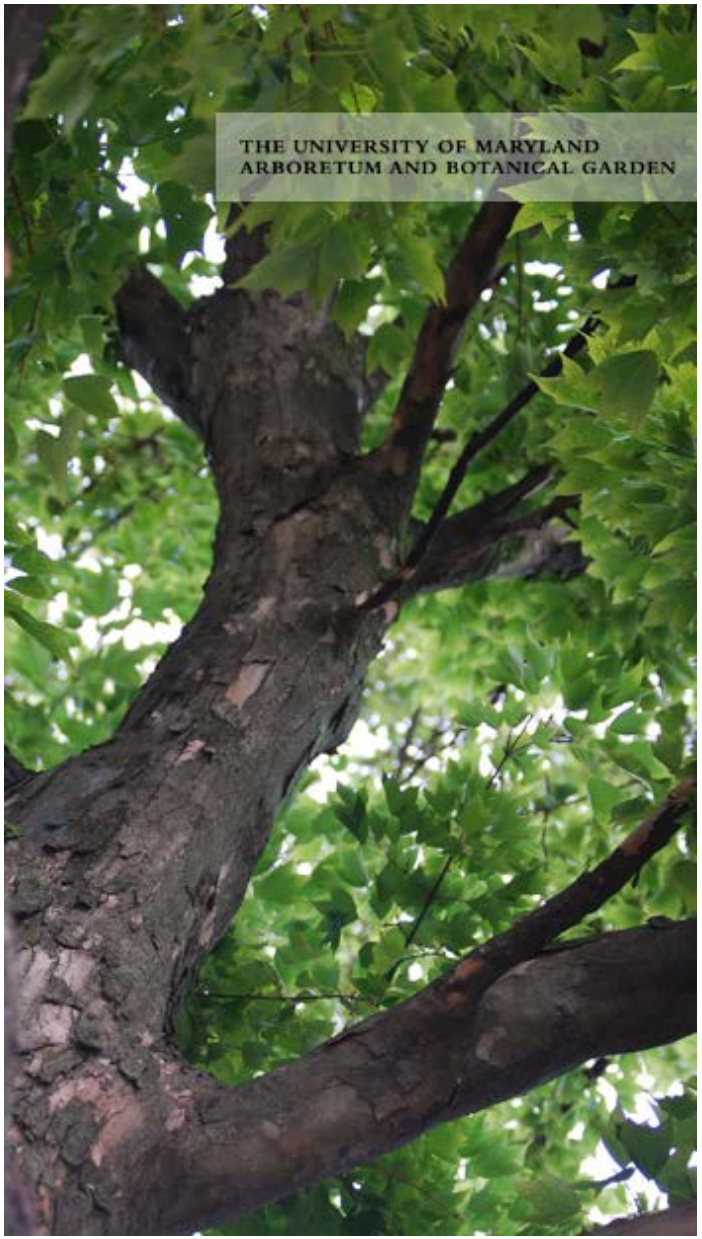
Damage Assessment will be calculated through use of the book "Guide for Plant Appraisal", most current edition, by the Council of Tree and Landscape Appraisers through the International Society of Arboriculture. This will be used as the base line for appraisals. The species rating that is included within the appraisal will come from the Mid-Atlantic Tree Species Rating Guide published by the Mid-Atlantic Chapter of the International Society of Arboriculture, most current edition.

Damages that occur to plant material will be compensated by payment or through replacement efforts at the recommendation of the Tree Advisory Committee.

Penalties will be directly related to replacement and appraisal value of the plant material damaged and will be enforceable to extent allowed by the applicable laws of the state of Maryland.

C. Documentation

Landscape Services will assume the responsibility for maintain all documentation of campus tree inspections, pruning, removal and planting. These documents will only be made public through permission of the University Administration.



D. Inventory (Goals and Targets)

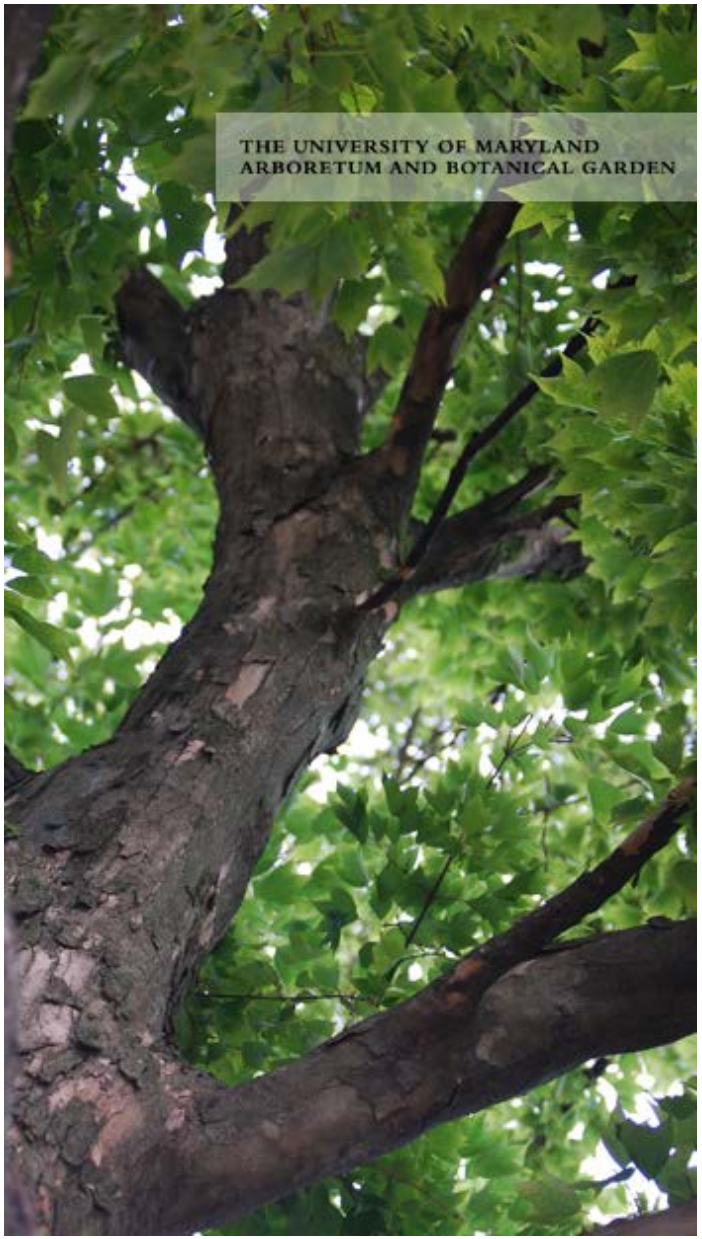
Efforts will be made to keep the Campus Plant Inventory as current as possible. All trees located within the campus landscape setting with a 6" diameter at breast height and larger are inventoried and documented to the species level with notes on health, defects, height, and crown radius. These trees also have a round aluminum tag with a unique identification number. Currently there are approximately 4,500 trees with these tags.

E. Tree Canopy and Campus Master Plan

Currently the Tree Canopy is at 26.9% over the campus with a canopy coverage goal of 40%. In order to progress multiple methods will be implemented. Tree removals will be limited to hazardous trees, trees that directly impact construction where preservation is not a viable option, severely damaged, diseased or dying trees. There will be an effort to plant replacement trees in the location of the removed tree if possible, practical and advisable. We will also work within the vision of the Campus Master Plan to ensure that replacements or new planted trees will not create conflict with future planned development and will instead reach a mature life stage and contribute to the canopy. The Campus Plant Inventory will also be used in conjunction with the composite utility maps to ensure predictable longevity of the newly planted material.

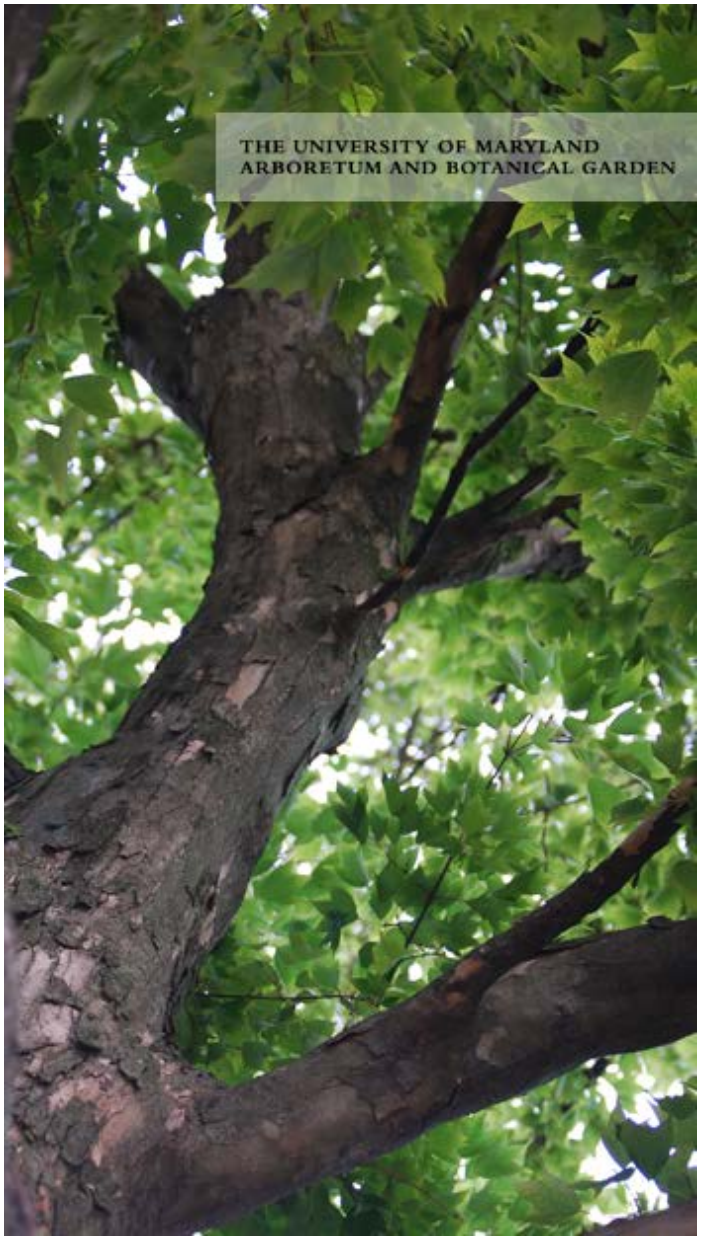
F. Tree Protection Policy During Construction (Protection and Preservation)

I. General
   1. Intent:
      a. The University of Maryland – College Park (UMD) is committed to tree protection.
      b. The tree canopy/ tree root zones shall be protected during the entire construction process.
      c. Tree trunks and branches shall not be damaged by equipment and/or workers and tree root protection zones shall be



protected from soil compaction, damage by trenching or excessive grade changes, and hazardous materials or waste products.

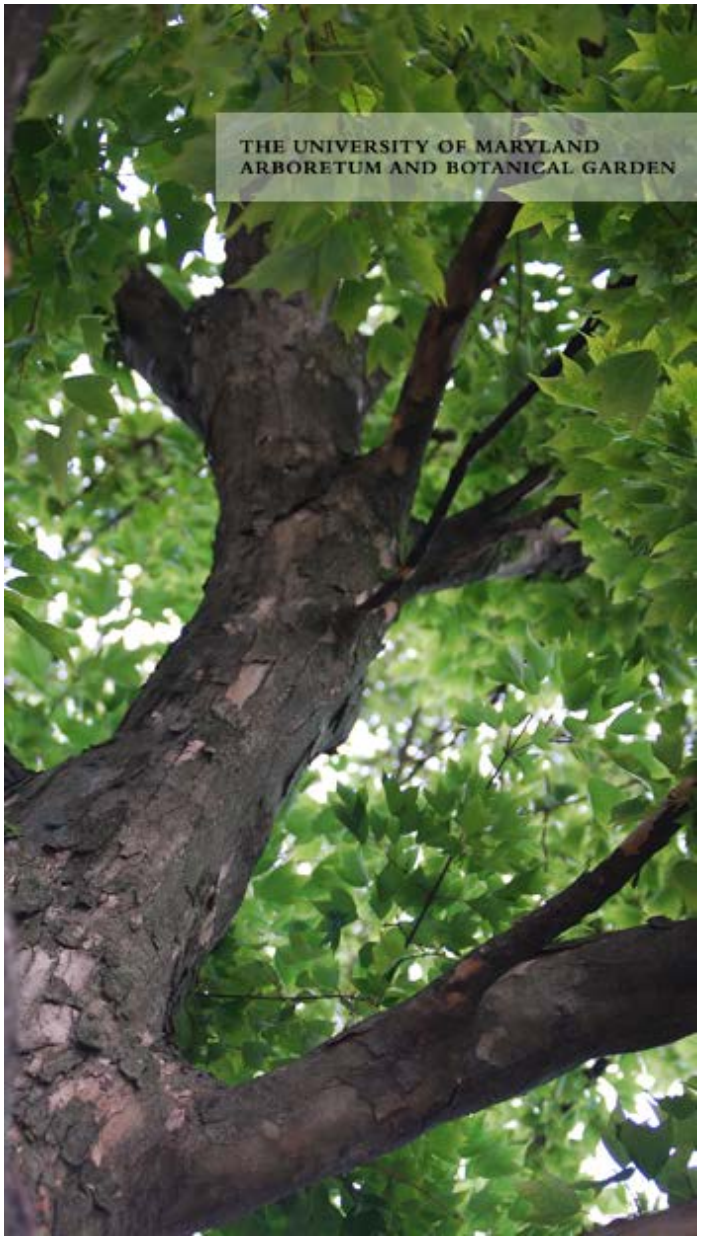
2. Protection of Existing Utilities:
    a. Prior to any work being performed the Contractor shall insure that all existing utilities within and surrounding the project site have been clearly marked in accordance with UMD excavation permit procedure.
3. Submittals:
    a. Prior to the start of any construction work the UMD Campus Arborist or designate will create a Tree Canopy/Tree Root Zone Protection Plan. Development of this plan may include input from the Campus Landscape Architect, Campus Horticulturist, Assistant Director of Arboretum/ Horticultural Services and Assistant Director of Landscape Services. This plan shall be of the entire site showing accurate trunk locations and drip-line dimensions of all trees on the project site, limits of disturbance (including all points of proposed excavation and overhead work), locations of tree canopy/tree root protection zones, and indicating all appropriate protective measures to be taken. This map will include estimated pre-construction valuation per accepted standards (see Section IV. B. – Damage Assessment, Enforcement and Penalties)
    b. The Contractor shall submit a written guarantee that he/she shall not enter the tree protection zones at any time during construction without first getting approval from the Campus Arborist.
    c. Tree work should be included into the Project Schedule
4. Tree Canopy/Tree Root Protection Zones
    a. Prior to the start of any site work the Contractor or designate will erect fencing around trees which are to be preserved and sensitive tree root zones which are to be protected within the construction site. Root pruning and soil injections maybe completed before the erection of the fence.
    b. Trees indicated on the plan to remain shall be protected from injury to their branches, trunks and root zones during the entire



construction period. Protection of tree canopy/ tree root zones shall be by the placement of temporary fencing as outlined in Section IV. F. II. – Materials.

i. No removal or encroachment into tree protection enclosures shall be permitted unless coordinated with Campus Arborist.

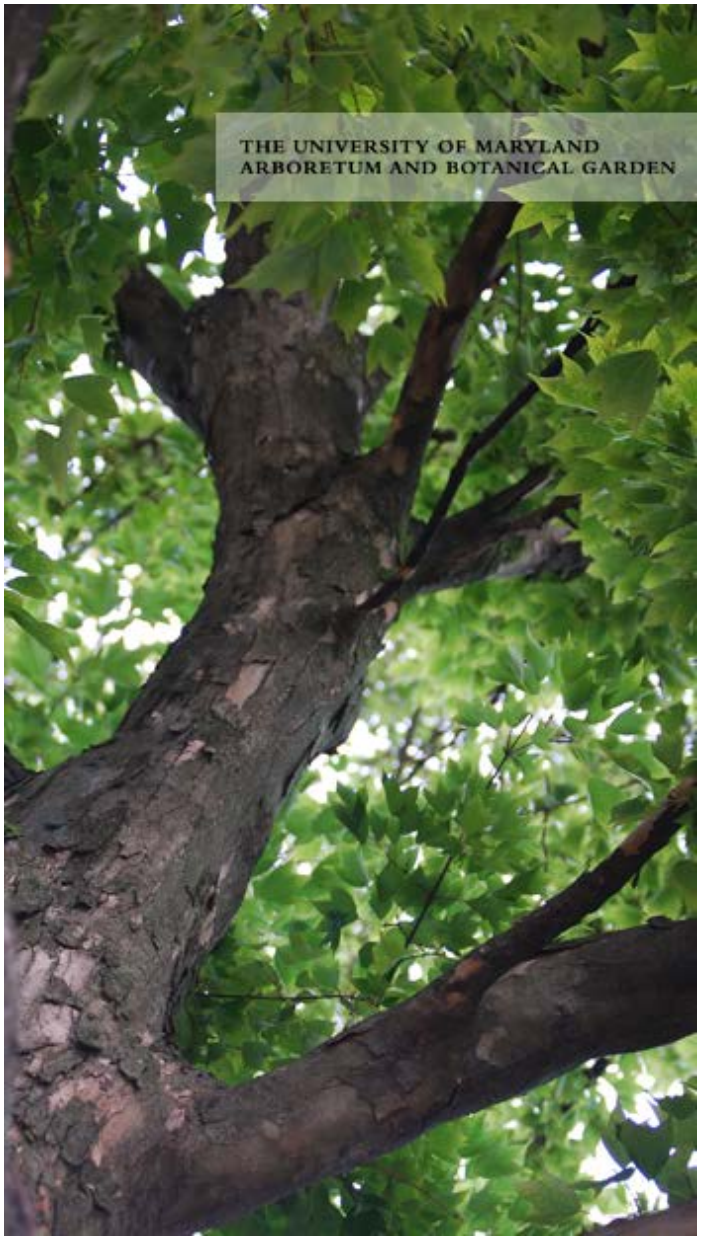
c. The Contractor or designate shall be responsible for the installation and maintenance of all tree protection fencing. Protective fencing shall remain undisturbed until all construction activities have been completed. The Contractor or designate shall remove fencing upon completion of construction.
   i. If protective fencing is damaged, the Contractor shall immediately execute the necessary repairs to re-establish the protective fencing to original configurations outlined on the Tree Canopy/Tree Root Protection Zone Plan.
   ii. At the conclusion of the project, as tree protection fencing is being removed, the Contractor shall continue to identify and enforce tree canopy/ tree root protection zones using temporary measures until final acceptance. The use of these temporary protection methods is only acceptable for a period not to exceed 5 business days. A list of appropriate materials and methods for temporary protection are listed in Section IV. F. II. – Materials.
   iii. The Contractor shall be held liable for any damages to protected trees and root zones caused by unauthorized intrusions into the protected areas during the construction period. Penalties to be enforced are outline in Section IV. F. IV - Liability.
d. Any pruning of trees that may be required during the course of construction shall be performed by the Campus Arborist, an appointee of the Campus Arborist or by a Contractor appointed or approved by the Campus Arborist. Requests for pruning



shall be made through the Campus Arborist with at least two days (48 hours) notice.

e. Erosion control devices shall be installed as per the contract drawings with particular emphasis on preventing silting, erosion, and/or damage by runoff to the tree root protection zone. This includes placement of E&S materials outside the tree protection zone to avoid materials/chemicals traveling into it from construction activities.

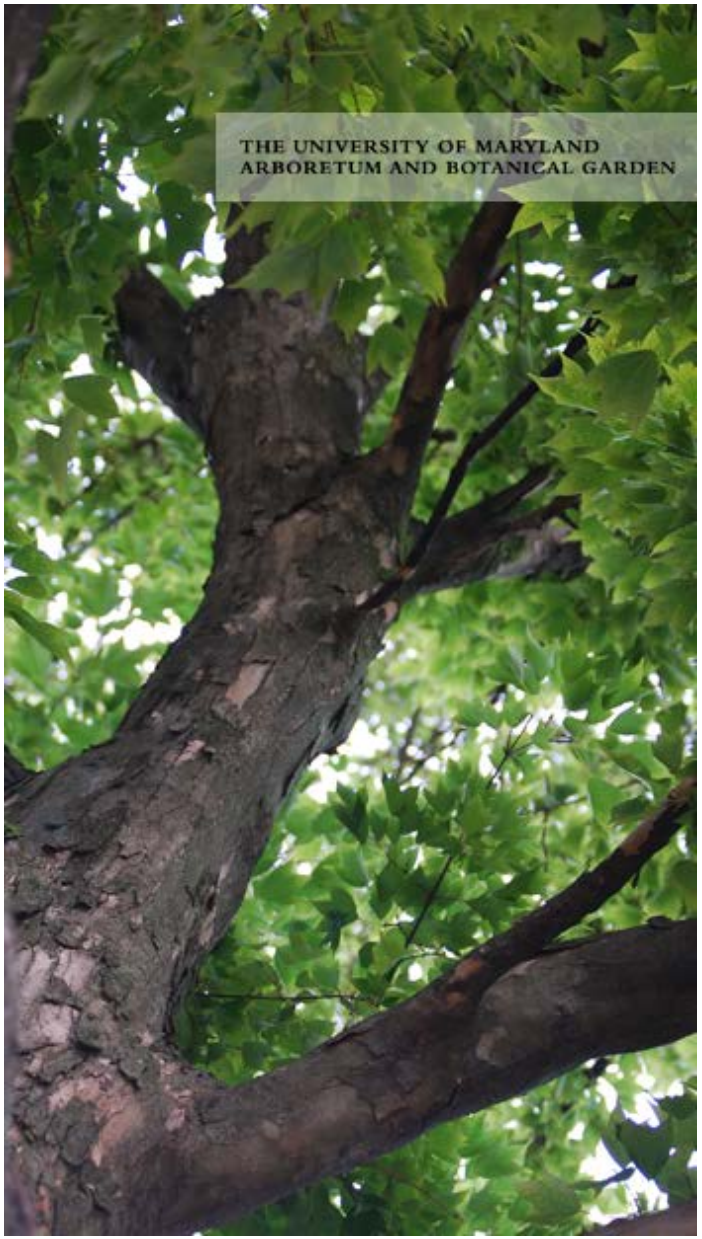
II. Materials
    1. Equipment and Materials:
        a. Equipment:
            i. As selected by the Contractor, except as otherwise indicated, to complete work in a safe manner and to protect all personnel and bystanders involved.
        b. Materials:
            i. Protective fencing shall be 4 feet high chain link fence supported by 2 inch diameter galvanized iron posts set to a minimum depth of 2 feet. Posts shall be spaced a maximum of 10 feet on center and a 3 feet wide gate shall be provided to allow maintenance access to the protection zone. Movable fence panels may only be used upon approval from Campus Arborist. Fencing must completely encompass protected area.
            ii. An 11" x 14" sign indicating the area as a "Tree Protection Area "shall be prominently displayed on each multiple sides of the fence. Signs may be obtained by contacting UMD Sign Shop or loaned out by the Arboretum Botanical Garden.



iii. Temporary protection measures shall be strictly enforced at the conclusion of the project, up until final acceptance. These methods may include, but are not limited to the use of signs, post and wire, or other methods approved by the Campus Arborist.

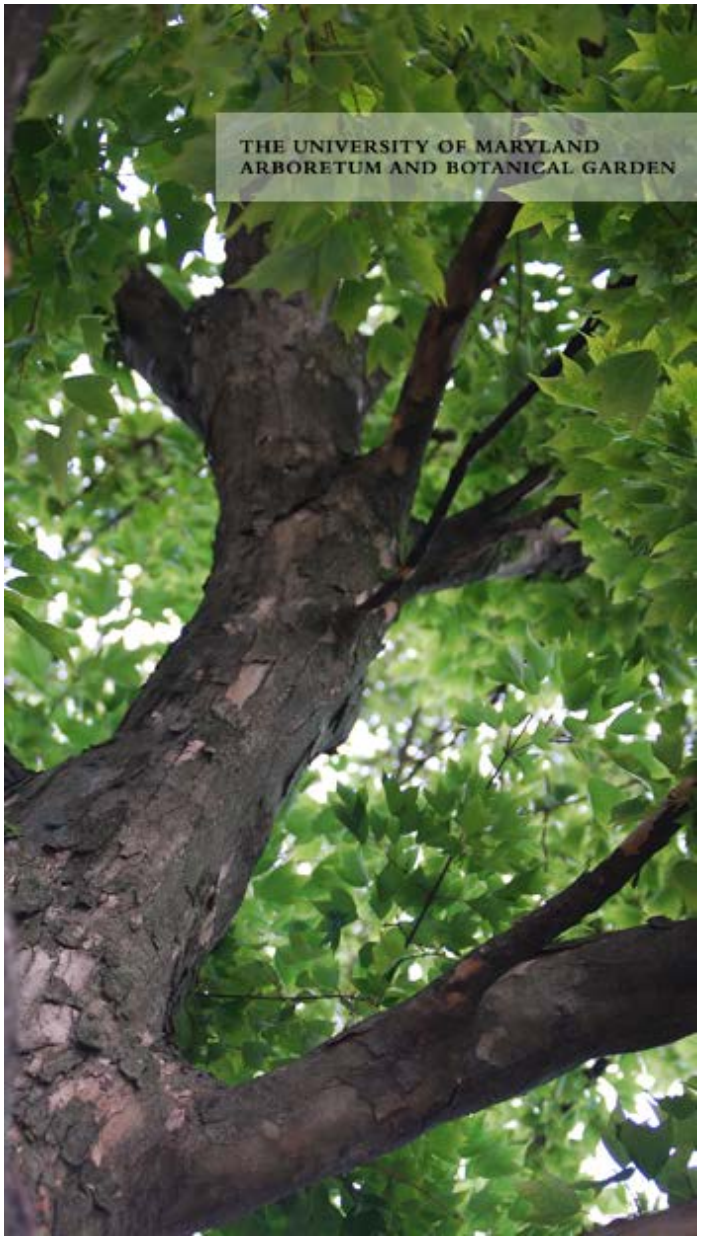
III. Execution

1. Scope of work within or around Tree Canopy Protection Zone:
   a. Trees to be removed that have branches extending into the canopy of trees to be preserved shall be removed under the continuous supervision of an Arborist certified through the International Society of Arboriculture and not by a demolition or construction contractor. The Arborist shall remove the tree (s) in a manner that causes no damage to the protected trees and landscape to remain after the construction period.
   b. Trees to be removed shall be felled so as to fall away from protection zones and to avoid pulling and breaking of roots or branches of trees indicated on remain on the Tree Canopy/Tree Root Protection Zone Plan.

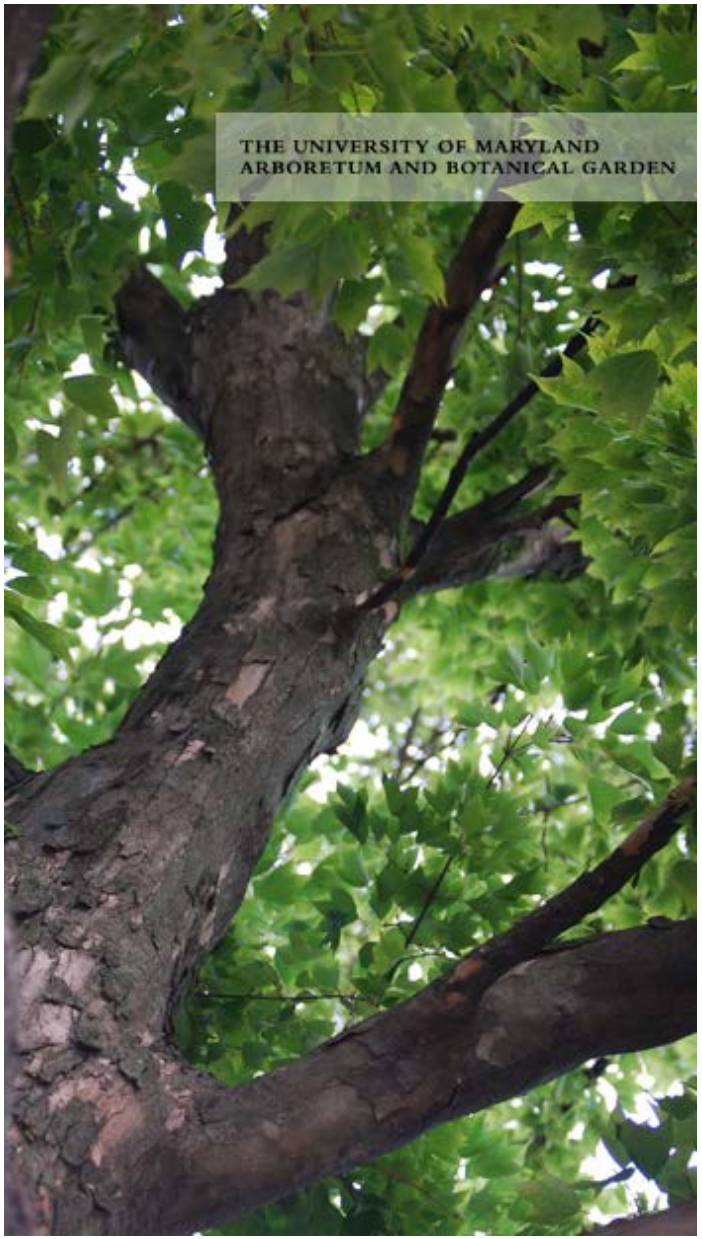


c. Any brush clearing required within or around the tree canopy/tree root protection zone shall be accomplished with hand operated equipment.
d. The Contractor shall be held liable for damages incurred to any tree branches that extend over protective fencing and to any trees or other plant material located on the site and indicated on the plan to remain. The Contractor shall notify the Campus Arborist when any overhanging branches or other plant material interferes with the construction activity or pose potential risks to workers or bystanders.
e. If plans and field situations do not match and work must occur closer to any existing tree (s) than planned, the Contractor shall notify the Campus Arborist to evaluate and to determine future viability of the existing tree (s) located within the area of proposed construction or excavation. Final evaluations shall be coordinated with Campus Arborist, Campus Landscape Architect, Campus Horticulturist, Assistant Director of Arboretum/ Horticultural Services or Assistant Director of Landscape Services to determine if the tree (s) should remain, be relocated, or be removed.

2. Scope of work within or around Tree Root Protection Zone:
   a. Any grading, construction, demolition, or other work that is expected to encounter tree roots shall be made in consultation with the Campus Arborist.
      i. Any digging that must occur within the Tree Root Protection Zone must be done with the Campus Arborist present and must utilize alternative excavation methods including, but not limited to air spading, hand excavation or other method approved by the Campus Arborist.
   b. Any roots 2 inches in diameter or less that sustain damage during construction shall be exposed to sound tissue and cleanly pruned close to the tree side of the excavation. Clean cuts shall be made at all times. The cutting of tree roots greater than 2 inches in diameter must be approved and supervised by the Campus Arborist.



c. Trees to be removed adjacent to the tree root protection zones shall be cut near ground level and the stump ground out to avoid damaging existing roots by pulling and breaking.
d. For those construction projects requiring temporary access or haul roads through the protection zone, a roadbed shall be installed using a Geotextile designed for tree root protection covered with 6 inches (minimum) of mulch, wood chips or gravel to protect soil and minimize soil compaction, air spading may follow. In those cases approval shall be given by the Campus Arborist prior to the start of any construction activities. The roadbed material shall be maintained as necessary to maintain its original state.
e. No material shall be stored or piled within the tree root protection zone unless otherwise approved by the Campus Arborist. No gasoline, fuel oil, harmful chemicals or other deleterious materials shall be stored, spilled or deposited on the ground within the tree root protection zone.
f. There shall be no vehicular traffic or parking permitted within the tree root protection zone.
g. Foot traffic shall be kept to a minimum within the tree root protection zone. If temporary foot traffic must be directed over the tree root protection zone a pathway shall be installed using Geotextile designed for tree root protection covered with 3 inches (minimum) of mulch, wood chips or gravel to protect soil and minimize soil compaction. In those cases approval shall be given by the Campus Arborist prior to the start of any construction activities. The pathway material shall be maintained as necessary to maintain its original state.
h. Installation of curbs and sidewalks shall be completed in a manner least damaging to trees and tree root systems. Geotextile designed for tree root protection shall be considered a viable alternative to the specified sub-base in sensitive root zones. When unique site conditions not addressed in the contract documents results in the opportunity for an alternative solution or a potential modification to the plan, the Contractor may present a proposal to the Campus Arborist.



IV. Liability:

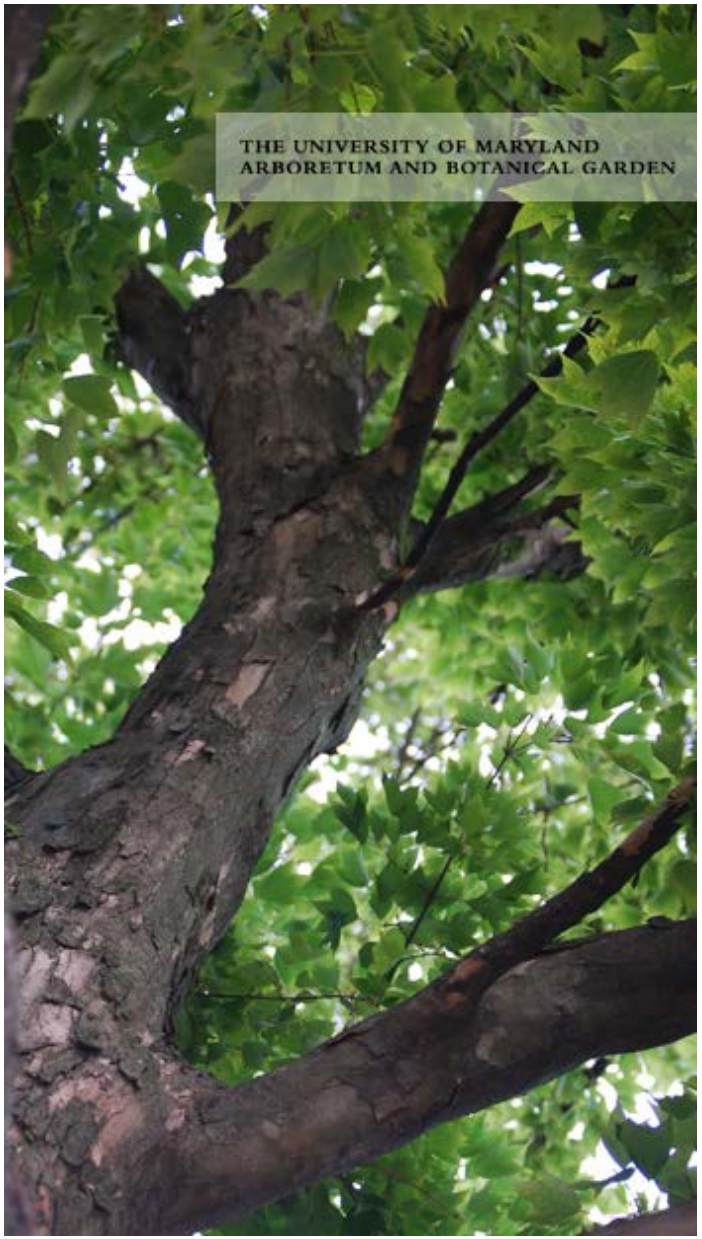
1. The Contractor shall be held liable for any damage to protected trees. A dollar value shall be determined by the Campus Arborist or certified tree appraiser following criteria outlined in the "Guide of Plant Appraisal" (Council of Tree and Landscape Appraisal, Latest Edition). Liability amount is three time the equated Appraisal amount or a prorated amount for proportional incurred damages. Damage to shrubs, perennials and annuals will result in liability of triple the appraised amount.
2. The Contractor shall be held liable for all remedial measures required to treat broken limbs, or damaged trees and roots, or for the unauthorized removal of existing trees or plant material. All remedial treatments will be accomplished by the Campus Arborist and/or their designee. Remediation treatments may include but will not be limited to:
    a. Air Spading
    b. Soil injections of Fertilizer and Mycorrhizae
    c. Root Pruning
    d. Crown Cleaning
    e. Pest Treatments Resulting from Secondary Invaders
    f. Removal Cost

Tree Replacement at an 1 inch to 1 inch ratio per Diameter at Breast Height

V. Definitions

Diameter, breast height (DBH) – The diameter of the main stem of a tree measured at 4.5 feet above base grade. If limbs or defects at this height prevent accurate measurement, the height of measurement may be adjusted above or below to the nearest point of normal diameter.

Campus Plant Inventory – Regularly updated GIS based database including species, size, condition, risk rating, significant information such as arboretum specimen, academic use, or commemorative status.



IPM – Integrated Pest Management relying on frequent monitoring of plant health and significant pest populations and selection of highly targeted low impact remedies, considering University sustainability goals.

Maryland Tree Expert Law- Anyone seeking to practice or advertise tree care services in the State of Maryland must obtain a license from the Maryland Department of Natural Resources.

Radar Inspection – Collection of structural data using the Tree Radar Unit (TRU™) which uses ground penetrating radar technology. Analysis allows assessment of the extent of decay or integrity in trunk and major root systems.

Risk Zones – Delineation of campus areas with respect to degree of pedestrian and vehicular traffic, historic character, security issues and other factors.

Roadside Tree Law – This law and its regulations were developed to protect roadside trees in Maryland by ensuring their proper care and protection and to ensure their compatibility with and efficient and dependable public utility system.

Tree Canopy – An aerial assessment of the total ground cover of the given space occupied by tree canopy. Percentages are derived from most recent comprehensive UFORE analysis of university land holdings in 2008.

VI. Communication Strategy

Campus Tree Care developments, including participation in the Tree Campus USA program will be placed in the student newspaper, *The Diamondback*, and publicized through several campus-wide email publications. Information will be included on the University of Maryland Facilities Management Arboretum and Botanical Garden website, Office of Sustainability website and appropriate press releases made to the local media through the office of University Marketing and Communications.

Attachment K

Stormwater Pollution Prevention Plan

For:

University of Maryland
1101 Main Administration Building
7901 Regents Drive
College Park, MD 20742
(301) 405-1000

SWPPP Contact(s):

University of Maryland,
Department of Environmental Safety, Sustainability & Risk
Jason Baer, Assistant Director of Environmental Affairs
Seneca Building
4716 Pontiac Street
College Park, MD 20742
(301) 405-3163
jbaer123@umd.edu

SWPPP Preparation Date:

July 2017

Table of Contents

Appendices:

SECTION 1: FACILITY DESCRIPTION AND CONTACT INFORMATION

1.1 Facility Information

Facility Information

Name of Facility: University of Maryland, College Park

Street: 1101 Main Administration Building, 7901 Regents Dr.

City: College Park State: MD ZIP Code: 20742

County: Prince George's County

State Discharge Permit Registration Number: 08-DP-2618

State Municipal Separate Storm Sewer System Permit: 05-SF-5501

State Stormwater Discharge Permit: 12-SW-_____

Latitude: 38.9847 º N (decimal)

Longitude: - 76.9662 º W (decimal)

Estimated area of industrial activity at site exposed to stormwater: 22.5 acres

Primary SIC Code or 2-letter Activity Code: 8221 (Colleges, Universities, and Professional Schools)

Identify your applicable sector and subsector: AD.b: School Bus Maintenance Facilities

Name and 8 digit identifier of the receiving water body: 02140205 (Anacostia River)

Are any of your discharges directly into any segment of an "impaired" water? ☒ Yes ☐ No

If Yes, identify name of the impaired water (and segment, if applicable): Anacostia River

Identify the pollutant(s) causing the impairment: Bacteria (Enterococcus), Biochemical oxygen demand (BOD), Ions (chlorides, sulfates), Nutrients (nitrogen, phosphorus), Polychlorinated Biphenyls (PCBs), Pesticides (Heptachlor Epoxide), Stream Modifications (channelization, lack of riparian buffer), Debris/Floatables/Trash, Sediments (total suspended solids).

For pollutants identified, which do you have reason to believe will be present in your discharge? None

For pollutants identified, which have a completed TMDL? BOD, Debris/Floatables/Trash, Enterococcus, Nitrogen, Phosphorus, PCBs, Total Suspended Solids (TSS).

Do you discharge into a high quality receiving water designated as a Tier 2 water? ☐ Yes ☒ No

1.2 Contact Information/Responsible Parties

Facility Operator (s):

Name: University of Maryland, College Park
Address: 1101 Main Administration Building, 7901 Regents Drive
City, State, Zip Code: College Park, MD 20742

Facility Owner (s):

Name: University System of Maryland - Maureen Kotlas, Executive Director, Department of Environmental Safety, Sustainability & Risk
Address: Seneca Building, 4716 Pontiac Street
City, State, Zip Code: College Park, MD 20742
Telephone Number: 301-405-3960
Email address: mkotlas@umd.edu

SWPPP Contact:

Name: Jason Baer, Assistant Director of Environmental Affairs
Telephone number: 301-405-3163
Email address: jbaer123@umd.edu

1.3 Stormwater Pollution Prevention Team

Staff Names	Individual Responsibilities	Contact Info
Jason Baer, Assistant Director of Environmental Affairs, UMD	Verify that the SWPPP is up to date; Ensure that all permit requirements and BMPs are being correctly implemented at the Environmental Services Building and all of DA-1.	301-405-3163; jbaer123@umd.edu
Michael Carmichael, Stormwater Management & Maintenance Inspector, UMD	Ensure that all permit requirements and BMPs are being correctly implemented at the UMD Landscaping Vehicle and Equipment Storage, Salt Dome, Vehicle and Equipment Maintenance in DA-2.	301-314-1824; mmcarmic@umd.edu
Peter Agustin, Manager, UMD	Ensure that all permit requirements and BMPs are being correctly implemented at the University Bus Facility Parking, Fueling, and Maintenance area in DA-3.	301-314-7267; pedawg@umd.edu

Jerry Romanow, Coordinator, UMD	Ensure that all permit requirements and BMPs are being correctly implemented at the Art School Smelting and Scrap Metal Storage in DA-4.	301-405-1447; jromanow@umd.edu
Larry Brookman, Facilities Manager, UMD	Ensure that all permit requirements and BMPs are being correctly implemented at the Severn Building in DA-5 with the exception of vehicle fueling & maintenance.	301-226-8613; lbrookma@umd.edu
Leigh Remz, Manager, UMD	Ensure that all permit requirements and BMPs are being correctly implemented at the vehicle fueling & maintenance in DA-5.	301-405-5483; lremz@umd.edu
Philip Riggs, Operations Manager, College Park Energy LLC	Ensure that all permit requirements and BMPs are being correctly implemented at the Steam Electric Plant and Oil Storage in DA-6.	301-405-8025; Philip Riggs@na.engie.com
Alexander Galbreath, Environmental Specialist, UMD	Verify that the SWPPP is up to date; Quarterly Visual monitoring, site inspections, SWPPP updates, and annual pollution prevention (P2) team training.	301-405-7016; agalbrea@umd.edu

1.4 Activities at the Facility

The University of Maryland (UMD) is located at College Park, Maryland 20742 within Prince George's County. UMD is approximately 4 miles from the northeast border of Washington, D.C. The campus core is generally bounded by University Boulevard to the north and west, Baltimore Avenue (Route 1) to the east, and Knox Road to the south. Baltimore Avenue bisects the southeastern portion of the campus. The campus consists of over 350 buildings on 1,335 acres of land. The campus consists of paved, unpaved, and construction areas. Accordingly, a significant portion of the campus is considered impervious. The campus is located in a suburban area surrounded by light commercial and residential areas.

The UMD campus maintains a Phase II Municipal Separate Storm Sewer System (MS4) that operates under General Discharge Permit No. 05-SF-5501. UMD is exempt from the 12-SW Chesapeake Bay Restoration requirements since it is owned by an entity that is permitted as an MS4. This exemption is described in Part III.A of the 12-SW permit.

The University is permitted by State Discharge Permit No. 08-DP-2618 (NPDES permit MD0063801) to discharge contact and non-contact cooling water, boiler blowdown, condensate and stormwater runoff from twelve (12) outfalls. These outfalls discharge to Campus Creek, Guilford Run and Paint Branch Creek. Water from these discharge points ultimately flow to the

Anacostia River and to the Chesapeake Bay. UMD treats some of its stormwater discharges using various BMPs, including oil-water separators, retention ponds, swales, and stormceptors. A site vicinity map is attached as Appendix A.

The site is broken into six (6) regulated drainage areas that are covered by the 12-SW permit and contains thirteen (13) sheet flow outfalls for their SWPPP monitoring. Runoff from the drainage areas is conveyed into stormwater inlets across campus and is discharged off site to the aforementioned waterways. UMD has approximately ninety (90) stormwater outfalls, but only thirteen (13) outfalls are subject to the requirements of the 12-SW permit.

UMD's primary classification under the permit is industrial Sector AD.b: School Bus Maintenance Facility. Other applicable sectors include Sector F: Primary Metals; Sector K: Hazardous Waste Treatment, Storage, or Disposal Facilities; Sector O: Steam Electric Generating Facilities; Sector P: Land Transportation and Warehousing; and Sector AD.a: Department of Public Works and Highway Maintenance Facilities. The following subsections describe each drainage area including their general activities and potential contributors to stormwater pollution.

Drainage Area 1

Facility:	Environmental Services Building
Primary Activities:	Hazardous Waste Storage and Transportation
Industrial Activity:	Sector K: Hazardous Waste Treatment, Storage, or Disposal Facilities
Imperviousness:	High
Associated Outfalls:	Outfall #001 SW
Outfall Monitoring:	Visual
Acreage:	~0.55

Drainage Area 1 (DA-1) is located on the northwestern side of the UMD campus and includes the Environmental Service Facility (Building #344), employee parking area, a loading and unloading area, and storage of new empty 55-gallon drums. It is bound to the south by Drainage Area 2 (DA-2). Within the facility is the indoor storage of hazardous waste generated on campus and offices for personnel employed with the Department of Environmental Safety, Sustainability, and Risk (ESSR). This facility is covered by the Resource Conservation and Recovery Act (RCRA) permit number MDD980829873 for hazardous waste storage and treatment operations.

The 55-gallon drums located at the Environmental Service Building are new/unused and are stored within a three-sided enclosed area in DA1; therefore, they are not expected to be a source of pollutants or exposed to stormwater. Hazardous waste from the campus, particularly the University's labs, is collected, transported, and stored onsite in accordance with UMD's RCRA permit until it is transported off-site for disposal/destruction. Loading and unloading of hazardous materials at the Environmental Service Building are completed at the loading/unloading areas on either the southern end or the southeastern end of the building. An

awning extends from both loading/unloading areas to shield the hazardous waste from stormwater. All hazardous waste is delivered in closed containers within secondary containment. Stormwater in DA-1 drains southeast by sheet flow to Outfall #001SW, at the edge of the drainage area's southeastern end. BMPs for this drainage area include the storing and consolidation of all hazardous material/wastes indoors and stationing a spill kit at loading/unloading area.

Drainage Area 2

Facility:	Building & Landscape Maintenance Facility
Primary Activities:	UMD Landscaping Vehicle and Equipment Storage, Salt Dome, Vehicle and Equipment Maintenance
Industrial Activity:	AD.a: Department of Public Works and Highway Maintenance Facilities
Imperviousness:	High
Associated Outfalls:	Outfall #002SW, Outfall #003SW and #004SW (Substantially Identical)
Outfall Monitoring:	Visual
Acreage:	~2.55

Drainage Area 2 (DA-2) is located on the northwestern side of the UMD campus and includes the Wye Oak Building (Building #428), Grounds Material & Equipment Building (Building #124), Grounds Operations & Maintenance Building (Building #328), Heavy Equipment Building (Building #426), Ground Storage Building (Building #327), vehicle and equipment storage, chemical storage, sand/gravel stock piles, a salt storage dome, and a small yard waste storage area. DA-2 is bound to the northwest by DA1, to the north by Landscape Lane, and to the south and east by Terrapin Trail.

DA-2 contains one 1,000-gallon double-walled gasoline aboveground storage tank (AST), one 1,500-gallon double-walled diesel fuel AST, one 550-gallon waste oil AST in secondary containment; and one 520-gallon double-walled diesel fuel AST. All four ASTs in DA-2 are adjacent to Building #328 and are equipped with spill kits and are inspected monthly in accordance with the UMD Spill Prevention, Control, and Countermeasure (SPCC) Plan.

Landscaping equipment, such as lawnmowers, are stored in the southern portion of the drainage area. Maintenance of landscaping equipment generally is performed outdoors; in the event of precipitation it is moved within Building #328. Heavy equipment storage and maintenance occurs adjacent to and within Building #426. The salt dome is in the southwestern corner of the drainage area. The salt is protected from stormwater by the dome, which is enclosed on three sides with one open entrance equipped with a berm to prevent runoff from entering. Approximately 600 tons of rock salt are stored within the salt dome, which is typically delivered in the fall for storage until it is needed in the winter months. Additional salt may be ordered on an as needed basis. Current best management practices (BMPs) in place at the salt dome include loading and unloading within the dome structure and sweeping excess rock salt back into the

dome. Gravel and sand stockpiles are located adjacent to Building #124 on its north side. There is a small area with yard waste (tree branches, leaves, etc.) storage adjacent to Building #124. Current BMPs in place at the gravel/sand stockpiles and yard waste storage include the strategic placement of hay bales to prevent sediment from entering the stormwater system, and concrete walls on three sides to contain the stockpiles. Chemical and small equipment storage is located indoors around the perimeter of DA-2 within the enclosed structures.

Stormwater in DA-2 drains by sheet flow to three stormwater inlets within the drainage area where it enters UMD's stormwater conveyance system. Outfall #002SW is located adjacent to the inlet at the southwestern corner of building #124; Outfall #003SW is located in the northeastern portion of the drainage area; and Outfall #004SW is located at the southeastern corner of the drainage area. Since the stormwater leaving this drainage area is similar in effluent, Outfalls #002SW, #003SW, and #004SW are considered substantially identical. Therefore, they will be monitored in accordance with Part III.C.5.b.iv of the 12-SW Permit (Appendix C).

Drainage Area 3

Facility:	Shuttle Bus Facility
Primary Activities:	University Bus Facility Parking, Fueling, and Maintenance
Industrial Activity:	AD.b: School Bus Maintenance Facility
Imperviousness:	High
Associated Outfalls:	Outfall #005SW and #006SW (Substantially Identical)
Outfall Monitoring:	Visual
Acreage:	~3.0

Drainage Area 3 (DA3) is located on the northeastern side of the UMD campus and includes the Shuttle Bus Facility (Building #424), University Bus parking and maintenance, and fueling operations. DA3 is bound to the west by Paint Branch Drive and to the south by the University's Field Hockey and Lacrosse Complex (Building #414). Wooded areas bound DA3 to the north and east. A stormwater pond is located at the southeastern corner of the drainage area. Another stormwater retention pond is situated just east of the drainage area.

DA3 includes one (1) 20,000-gallon double-walled diesel AST in the southeast corner of the drainage area; one (1) 550-gallon waste oil AST and (1) one 550-gallon motor oil AST in secondary containment on the south side of Building #424; five (5) 55-gallon drums within Building #424; two (2) 55-gallon drums of used antifreeze, one (1) 330-gallon IBC tote of diesel exhaust fluid, and four (4) 55-gallon drums are contained outside of Building #424. There are two (2) 1,600-gallon oil/water separators in DA3. The oil/water separator in the southeast corner drains to a stormwater pond adjacent to the 20,000-gallon double-walled diesel AST. The oil/water separator south of Building #424 drains to the sanitary sewer lines. Two (2) spill kits are located within DA3 and the ASTs are inspected in accordance with the UMD SPCC plan. There is also a small scrap metal storage area on the west side of Building #424. Current BMPs in place for the metal storage include covering the materials with a tarp to prevent contact with stormwater.

University bus washing and maintenance operations are conducted within DA3. University buses are stored on the parking lot in this drainage area. The BMPs in place include drip pans being placed underneath buses during storage and proper fueling procedures. A stockpile of tires are stored along the south perimeter against the drainage area's fence. Current BMPs in place for the tire storage include covering the materials with a tarp to prevent contact with stormwater. DA3 contains two (2) zipper drains surrounding Building #424 and one stormwater drain inlet adjacent to the 20,000-gallon double-walled diesel AST.

Stormwater in DA3 drains offsite by sheet flow or into the stormwater drain. Outfall #005SW is located in the southeast corner of the drainage area; Outfall #006SW is located in the northeastern corner of the drainage area. Since all of the stormwater leaving this drainage area is similar in effluent, Outfalls #005SW and #006SW are considered substantially identical. Therefore, they will be monitored in accordance with Part III.C.5.b.iv of the 12-SW Permit (Appendix C).

Drainage Area 4

Facility: Parren J. Mitchell Art-Sociology Building Smelter
Primary Activities: Art School Smelter, Scrap Metal Storage
Industrial Activity: Sector F: Primary Metals
Imperviousness: Low to Medium
Associated Outfalls: Outfall #007 SW
Outfall Monitoring: Visual
Acreage: ~0.25

Drainage Area 4 (DA4) is located on the southwestern portion of the UMD campus and includes metal storage and a smelter. This metal is feedstock for the smelter and used for the production of art. DA4 is bound to the west by Alumni Drive, to the south by Campus Drive, and to the east by Parren J. Mitchell Art-Sociology Building (Building #146).

One (1) roll-off dumpster is located within the drainage area and contains municipal solid waste and discarded metal. The scrap metal storage and smelting operations are contained within a fenced area with a locked gate. Access to the drainage area is only permitted to art students and University faculty/staff. The entire drainage area is considered pervious being situated on grass and gravel. The entire smelting operations and storage of metals is exposed to stormwater. BMPs include covering exposed metal and emptying and covering the roll-off dumpster during rain events.

Stormwater in DA4 drains by sheet flow, predominately to the southern end of the drainage area towards Outfall #007SW, which is located on the southern side of the drainage area, adjacent to the fence and sidewalk.

Drainage Area 5

Facility:	Severn Building
Primary Activities:	Loading and Unloading of Materials, University Vehicle Fueling
Industrial Activity:	Sector P: Land Transportation and Warehousing
Imperviousness:	High
Associated Outfalls:	Outfall #008SW and Outfall #009 SW (Substantially Identical); Outfall #010SW
Outfall Monitoring:	Visual
Acreage:	~13.2

Drainage Area 5 (DA5) is separated by approximately one half mile from the main UMD campus by Baltimore Avenue and residential properties. DA5 is bound to the north by Route 193 (Greenbelt Road), to the east by a train track right-of-way, and to the west and south by residential properties. DA5 encompasses the Severn Building (Building #810) and contains a fueling area in the northeastern portion of the facility with two (2) 10,000-gallon double-walled gasoline ASTs and one (1) 10,000-gallon double-walled E-85 gasoline AST. The fueling area contains zipper drains that flow to an oil water separator and then to the storm drain system. In the southeastern portion of the drainage area, there is one (1) 12,000-gallon double-walled fuel oil AST. Spill kits are located within DA5 and the ASTs are inspected monthly in accordance with the UMD SPCC plan. There are multiple loading/unloading docks along the north side of the Severn Building. A maintenance shop is located at the northern most portion of the maintenance facility. All vehicle maintenance is conducted within the shop. There is a scrap metal dumpster and a construction/demolition debris (C&D) dumpster outside the north side of Building #810. BMPs for the metal and C&D include covering the materials with a tarp to prevent contact with stormwater.

Stormwater in DA5 drains by sheet flow either off-site or into the stormwater drains. Outfall #009SW is located in the southeastern most corner of the drainage area. Outfall #008SW is located at the southwestern portion of the southern parking lot. Outfall #010SW is located in the northeastern corner of the drainage area. Since the stormwater leaving the southern end of the drainage area is similar in effluent, Outfalls #008SW and #009SW are considered substantially identical. Therefore, they will be monitored in accordance with Part III.C.5.b.iv of the 12-SW Permit (Appendix C).

Drainage Area 6

Facility:	Combined Heat & Power Facility
Primary Activities:	Steam Electric Plant, Oil Storage
Industrial Activity:	Sector O: Steam Electric Generating Facilities
Imperviousness:	High
Associated Outfalls:	Outfall #011SW; Outfall #012SW and #013SW (Substantially Identical)
Outfall Monitoring:	Visual
Acreage:	~2.95

Drainage Area 6 (DA6) is separated from the main UMD campus by Route 1 (Baltimore Avenue). DA6 is bound to the south by Rossborough Lane, to the west by Baltimore Ave. and the east by Campus Drive. Diamondback Drive dissects DA6. DA6 encompasses employee parking, the Service Building (Building #003), Energy Plant (Building #001), Plant Operations & Maintenance Shops (Building #006), and a fuel unloading area containing one (1) 8,000-gallon diesel AST in a diked containment that is surrounded by two (2) zipper drains to the sanitary sewer. There are two (2) 250,000-gallon fuel oil ASTs in a diked containment area in the southern portion of the drainage area. The ASTs in DA5 are inspected in accordance with the UMD SPCC plan and Oil Operations Permit #2014-OPT-3522. The operations of the steam electric generation are conducted inside the Energy Plant. Additives for the steam are stored in 55-gallon drums located outside within a contained pad on the northwestern end of the Energy Plant.

Stormwater in DA5 drains by sheet flow either off-site or into the stormwater drains. Outfall #011SW is located at the southeastern end of the drainage area, just below the fuel unloading area. Outfall #012SW and #013SW are on either side of the Energy Plant (Building 001). Since the stormwater leaving the center of the drainage area is similar in effluent, Outfalls #012SW and #013SW are considered substantially identical. Therefore, they will be monitored in accordance with Part III.C.5.b.iv of the 12-SW Permit (Appendix C).

1.5 General Location Map

A general location map showing the vicinity of the entire site in respect to the surrounding area in located in Appendix A.

1.6 Site Map

A site map, included as Appendix B, shows the topographic features of the whole site including, but not limited to, buildings, drainage areas, outfalls, associated features and drainage arrows.

SECTION 2: POTENTIAL POLLUTANT SOURCES

Based on the site visit and discussions with facility personnel, UMD has the potential to discharge pollutants from the following activities:

- Accidental Spills and Leaks
- Fueling Activities
- Aboveground Storage Tanks (ASTs)
- Loading/Unloading of Materials
- Loading/Unloading of Hazardous Materials
- Storage of Hazardous Materials
- Storage of Scrap Metal
- Steam & Electric Generation

2.1 Industrial Activity and Associated Pollutants

The United States Environmental Protection Agency (USEPA) SWPPP Guidance defines "significant materials" from 40 CFR 122.26(b)(12) as substances related to industrial activities such as process chemicals, raw materials, fuels, pesticides, and fertilizers. A copy of the 12-SW permit can be found in Appendix C and the UMD's Notice of Intent (NOI) can be found in Appendix D. An inventory of significant materials exposed to weather (i.e., located outdoors) was developed and is included in Appendix E. This list is primarily based upon visual inspections conducted during the development of this plan.

Industrial Activity	Associated Pollutants
Accidental Spills and Leaks	Diesel Fuel, Motor Oil, Used Oil, Gasoline
Fueling Activities	Diesel Fuel, Fuel Oil, Gasoline
Loading and Unloading Materials	Sediments, Metal, Fuel (coke)
Storage of Scrap Metal	Metal, metal slag
Loading, Unloading, and Storage of Hazardous Materials	Associated Hazardous Pollutants
Steam/Electric Plant	Chlorine, Boiler Additives, Sulfuric Acid, Used Oil

2.2 Spills and Leaks

Areas of Site Where Potential Spills/Leaks Could Occur

Location	Outfalls (SW)
Equipment and Vehicle Maintenance (DA2, DA3, DA5)	002, 003, 004, 005, 006, 008, 009, 010
Fueling Areas (DA2, DA3, DA5, DA6)	002, 003, 004, 005, 006, 008, 009, 010, 011
Hazardous Materials (DA1, DA6)	001, 012, 013
UMD Bus/Vehicle Traffic and Parking	All Outfalls

Description of Historical Outdoor Spills/Leaks Over Prior 3 Year Period

Date	Description (Type and Location)
05/02/2014	Diesel fuel spill at Roadway leading to Building #344
06/05/2014	Hydraulic fluid at Building #215
06/18/2014	Brake fluid at Parking Lot 1b, spot #531
06/26/2014	Automotive fluids at 6903 Preinkert Drive
09/23/2014	Oil at Mowatt Lane & Preinkert Drive intersection
12/04/2014	Petroleum product at Ellicott Dining Hall & Valley Drive
03/30/2015	Antifreeze at parking lot JJ Tawes Fine Arts Building
05/11/2015	Hydraulic fluid at loading dock at Bioscience Research Building
05/22/2015	Antifreeze at Campus Drive (gate house to “M Circle”) by Physics Bldg.
09/09/2015	Diesel fuel at rear outside of Maryland Stadium
11/07/2015	Sewage at Stadium Drive near Entrance E
11/11/2015	Transmission fluid at Shuttle Bus Facility
05/20/2016	Transmission fluid at Xfinity Center parking lot
08/12/2016	Transformer oil at Tau Kappa Epsilon Fraternity house
11/02/2016	Diesel fuel spill from leaking fuel tank traveling from Fieldhouse Drive to Regents Drive to MD Route 193 to Boteler Lane
05/15/2017	Diesel fuel leak at the Calvert Residence Hall
05/31/2017	Cooking oil/grease spill at Union Lane and Fieldhouse Drive

2.3 Non-Stormwater Discharges Documentation

The 12-SW Permit requires the completion of an annual "Non-Stormwater Discharges Evaluation" in order to identify and eliminate any non-stormwater discharges. The list below summarizes the previous evaluations performed and describes procedures for future evaluations.

- **Date of evaluation**: 8/25/2016, 10/10/2016, 10/11/2016
  Future evaluations are to be done and logged with the Comprehensive Annual Inspection by a member of the P2 team or other authorized party.

- **Description of the evaluation criteria used:** Visual inspections of components of the stormwater conveyance system are performed during periods of no precipitation. These inspections are performed to ascertain the existence and possible sources of non-stormwater discharges. The visual inspection is to be done annually with the comprehensive evaluation. Areas of interest include possible sources of contamination (i.e. fueling area, scrap metal storage, equipment storage, etc.).

- **List of the outfalls or onsite drainage points that were directly observed during the evaluation:**

  - Outfalls #001 through #005, #007, #010, #012, #014, #016, #018, and #019 associated with NPDES Permit No. MD0063801.

  - SWPPP Outfalls #001SW through #013SW.

- **List of the outfalls or onsite drainage points that will be directly observed during future evaluations:**

  - Outfalls #001 through #005, #007, #010, #012, #014, #016, #018, and #019 associated with NPDES Permit No. MD0063801.

  - SWPPP Outfalls #001SW through #013SW.

  - Additionally, at least 50% of all outfalls onsite will be screened annually as part of the MS4 Illicit Discharge Detection and Elimination (IDDE) Plan.

- **Different types of non-stormwater discharge(s) and source locations:** None were observed outside the regulations of UMD's State Discharge Permit No. 08-DP-2618 (NPDES Permit No. MD0063801).

- **Action(s) taken, such as a list of control measures used to eliminate unauthorized discharge(s), if any were identified. For example, a floor drain was sealed, a sink drain was re-routed to sanitary, or an NPDES permit application was submitted for an unauthorized cooling water discharge:** Several actions have been taken as part of

the University's IDDE Plan. These records are stored in the IDDE Plan at the Environmental Services Building.

2.4 Salt Storage

The salt storage facility is located in DA2 and can be seen on the site map in Appendix B. A description of the salt storage area as well as BMPs in place there can be found in Section 1.4 of this plan.

2.5 Visual Monitoring Summary

See Appendix F for a history of visual monitoring and summary of potential problems related to stormwater during the previous term.

SECTION 3: STORMWATER CONTROL MEASURES

As required by the 12-SW permit for the facility, UMD has developed and implemented a series of stormwater management controls. The purpose of the stormwater management controls is to minimize the potential for stormwater to become contaminated as a result of activities performed on-site.

The following set of stormwater management controls has been developed and implemented in regards to the activities at University of Maryland.

1. Preventive Maintenance
2. Good Housekeeping
3. Spill Prevention and Response Procedures
4. Management of Stormwater Runoff
5. Inspections
6. Pollution Prevention Training
7. Recordkeeping and Internal Reporting Procedures
8. Implementation Program
9. Fueling Areas
10. Vehicle and Equipment Maintenance
11. Vehicle and Equipment Storage Areas
12. Material Storage Areas
13. Smelting Operations

3.1 Minimize Exposure

Structural BMPs and practices are utilized to minimize the exposure of industrial activities to rain, snowmelt, and runoff. All scrap metal, and hazardous materials should be covered during precipitation events to the greatest extent possible in order to minimize exposure. Vehicles and equipment stored on site should have drip pans deployed underneath them to catch any leaks or spills. Appendix N contains a BMP fact sheet.

Vehicle maintenance takes place primarily within the confines of the maintenance shops at UMD. All hazardous materials associated with daily operations, such as oils and chemicals, are stored indoors or, when stored outdoors, are covered and within secondary containment. There are zipper drains located along the entrance to the maintenance bays that drain to the sanitary sewer.

A 20,000-gallon diesel fuel AST with fuel pumps is situated in the southeastern corner of DA3. A fueling area is situated in the western portion of DA5 with two (2) 10,000-gallon gasoline ASTs and one (1) E85 10,000-gallon gasoline AST. An additional 12,000-gallon fuel oil AST is situated along the southern end of DA5. Within DA6, there is a fueling area containing one (1) 8,000-gallon diesel AST in a diked containment area that is surrounded by three (3) zipper drains. All ASTs are double walled. There are several used oil ASTs within the campus. All

ASTs are listed within the Spill Prevention, Control, and Countermeasure (SPCC) Plan and are inspected on a regular basis per the UMD SPCC Plan.

3.2 Good Housekeeping

Good housekeeping requires the maintenance of a clean, orderly facility. A clean work environment reduces the potential for pollution sources to contact stormwater. Good housekeeping practices include material management (such as storing materials indoors), limiting inventories kept in stock, storing materials according to manufacturers' directions and storing them away from heavy traffic areas. Good housekeeping also includes waste management measures such as sweeping, regular pickup and disposal of waste materials, and routine cleaning. Leak/spill prevention and response measures are also incorporated into a good housekeeping plan. Avoiding, controlling and cleaning a spill will reduce the opportunity of stormwater contamination. As part of spill prevention effort, good housekeeping measures also include awareness measures such as posting signs with instructions for facility practices such as fueling or waste disposal.

The University of Maryland practices good housekeeping with respect to:

- Upkeep of facility roads and regular sweeping;
- Hazardous material storage areas, and loading/unloading within DA1 and DA2;
- Salt storage in DA2;
- Fuel system and fueling areas within DA3 at the 20,000-gallon diesel fuel AST, within DA6 at the two (2) 10,000-gallon gasoline AST, the one (1) E85 10,000-gallon gasoline AST, and the one (1) 10,000-gallon diesel AST;
- Maintenance of vehicles and equipment in DA2;
- Scrap metal storage and smelting activities that occurs throughout DA4 and DA5;
- Vehicle maintenance within DA5;
- Chemical storage within DA2 and DA5;
- Training employees about good housekeeping practices
- Regularly inspecting of all ASTs and drums per SPCC plan
- Regularly picking up and disposing of waste materials in all drainage areas throughout the campus.

3.3 Preventative Maintenance

A preventive maintenance program involves timely inspection and maintenance of stormwater management devices, in addition to inspecting facility equipment and systems to uncover conditions that could potentially cause breakdowns or failures resulting in discharges of pollutants to surface waters.

The facility's preventive maintenance program includes the following elements:

- Visual inspections of the stormwater management systems;
- Visual inspections of mechanical equipment and systems;
- Routine inspections of the facility following the Routine Inspection Checklist included in Appendix G;
- Annual Comprehensive Site Inspection following the Annual Inspection Checklist included in Appendix H. The previous years' inspections can be found in Appendix I;
- Routine inspections of ASTs and other storage tanks per the SPCC Plan;
- Records documenting inspections; all inspection records are maintained at the UMD Environmental Affairs office.
- Records documenting maintenance and repairs; all maintenance and repair records are completed and stored by the individual maintenance shops.

3.3.1 DELIVERY VEHICLES

UMD strives to minimize contamination of stormwater runoff from delivery vehicles while on campus. This includes occasionally inspecting delivery vehicles arriving at the site and ensuring overall integrity of the body or container, and maintaining response procedures to deal with leaks or spills from vehicles or containers (such as those contained within the UMD SPCC plan). The University also maintains 24-hour spill response capabilities to deal with any leaks from delivery vehicles, as well as buses, cars, and other non-UMD vehicles on the campus.

3.3.2 FUEL OIL UNLOADING AREAS

The University actively minimizes contamination of precipitation or surface runoff from fuel oil unloading areas. Several control measures are used, including: (a) using containment curbs in unloading areas; (b) having personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks or spills are immediately contained and cleaned up; and (c) using spill and overflow protection devices (e.g., drip pans, drip diapers, or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors). The primary UMD fueling facilities include the Severn Building, the Combined Heat & Power Plant, and the Shuttle Bus Facility; all of which

have oil water separators that receive the drainage from the fueling areas in order to prevent the discharge of fuel or oil.

3.3.3 CHEMICAL LOADING AND UNLOADING

UMD minimizes contamination of precipitation or surface runoff at chemical loading and unloading areas by one or more of the following strategies: (a) using containment curbs and/or spill kits at chemical loading and unloading areas to contain spills; (b) having personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks or spills are immediately contained and cleaned up; (c) loading and unloading in covered areas and storing chemicals indoors; and (d) using vehicles stocked with spill kits to transport chemicals onsite.

3.3.4 MISCELLANEOUS LOADING AND UNLOADING AREAS

UMD minimizes contamination of precipitation or surface runoff at loading and unloading areas by one or more of the following strategies: (a) covering the loading area; grading, berming, or curbing around the loading area to divert run-on; (b) locating the loading and unloading equipment and vehicles so that leaks are contained in existing containment and flow diversion systems; or (c) loading and unloading in covered areas.

3.3.5 LIQUID STORAGE TANKS

UMD minimizes contamination of surface runoff from aboveground liquid storage tanks by one or more of the following options: (a) protective guards around tanks, containment curbs, secondary containment, spill and overflow protection; (b) access to dry cleanup methods, and (c) regular inspections and maintenance following the schedule within UMD's SWPPP and SPCC plan.

3.3.6 LARGE BULK FUEL STORAGE TANKS

UMD minimizes contamination of surface runoff from large bulk fuel storage tanks by the use of containment berms (or their equivalent), and by complying with applicable State and Federal laws, including the UMD SPCC plan requirements.

3.3.7 SPILL REDUCTION MEASURES

UMD minimizes the potential for an oil or chemical spill by following the UMD SPCC plan and scheduled inspections. The scheduled inspections include visually inspecting the structural integrity of all aboveground tanks, pipelines, pumps, and related equipment that may be exposed to stormwater. Necessary repairs identified during the inspection are initiated immediately.

3.3.8 RESIDUE-HAULING VEHICLES

UMD strives to inspect all residue-hauling vehicles for proper covering over the load, adequate gate sealing, and overall integrity of the container body.

3.3.9 VEHICLE AND EQUIPMENT STORAGE

UMD minimizes the potential for stormwater exposure to leaky or leak-prone vehicles/equipment awaiting maintenance. One or more of the following strategies are used: (a) use of drip pans under vehicles/equipment; (b) indoor storage of vehicles and equipment; (c) installation of berms or dikes; (d) use of absorbents, roofing or covering storage areas; and (e) cleaning pavement surfaces to remove oil and grease.

3.3.10 FUELING AREAS

UMD minimizes contamination of stormwater runoff from fueling areas as well as fueling loading and unloading areas by following one or more of the following strategies: (a) covering the fueling area; using spill/overflow protection and cleanup equipment; (b) minimizing stormwater run-on/runoff to the fueling area; (c) using dry cleanup methods; and (d) treating (i.e. with oil water separators) and/or recycling collected stormwater runoff.

3.3.11 MATERIAL STORAGE CONTAINERS

UMD maintains all material storage containers (e.g., for used oil/oil filters, spent solvents, hydraulic fluids) to prevent contamination of stormwater and plainly label them (e.g., "Used Oil," "Spent Solvents," etc.). One or more of the following strategies are used: (a) storing the materials indoors; (b) installing berms/dikes around the areas; (c) minimizing runoff of stormwater to the areas; (d) using dry cleanup methods; and (e) treating and/or recycling collected stormwater runoff.

3.3.12 VEHICLE AND EQUIPMENT CLEANING AREAS

UMD minimizes contamination of stormwater runoff from all areas used for vehicle/equipment cleaning by one or more of the following strategies: (a) performing cleaning operations indoors when possible; (b) covering the cleaning operation, ensuring that all washwater drains to a proper collection system (i.e., not the stormwater drainage system); (c) transporting the collected wash water offsite for treatment; and (d) treating and/or recycling collected washwater.

3.3.13 VEHICLE AND EQUIPMENT MAINTENANCE AREAS

UMD minimizes contamination of stormwater runoff from all areas used for vehicle/equipment maintenance by: (a) performing maintenance activities indoors; (b) keeping an organized inventory of materials used in the shop; (c) draining all parts of fluid prior to disposal; and (d) using dry cleanup methods.

3.4 Spill Prevention and Response

Spill prevention and response measures focus both on spill prevention and on providing adequate measures to respond to leaks or spills to prevent surface water contamination. Areas most at risk for leaks and spills include fueling areas, equipment maintenance areas, and areas where vehicles and equipment are stored.

Spill prevention measures include:

- Proper storage practices;
- Routine inspections of potential pollutant sources;
- Regular inspections and maintenance of spill response kits, materials, and devices;
- Routine maintenance of equipment containing oil or hazardous materials; and

Spill containment and cleanup measures include:

- Identification and training of a Spill Response Team – the Environmental Affairs Unit performs 24/7 incident response;
- Maintaining spill cleanup materials in designated areas for immediate treatment;
- Using absorbent to control spills and promptly removing and properly disposing used absorbent;
- Blocking access to stormwater drainage systems;
- Contacting a licensed spill response contractor, if the spill cannot be immediately contained; the fire department may also provide containment response in emergencies;
- Contacting state, federal, and appropriate local agencies;
- Repairing equipment or tanks which caused a leak or spill to occur; and
- Maintaining records of spill occurrences for three years.

Specific spill response, notification and reporting procedures are provided in Appendix J and in the facility's SPCC Plan.

3.5 Erosion and Sediment Controls

Erosion concerns can be divided into two broad categories: (1) Erosion due to active construction projects and (2) chronic or nuisance eroding areas due to inadequate conveyance, steep slopes, or insufficient vegetative stabilization.

The first category of erosion potential is associated with various development projects being actively constructed or planned on campus areas. For construction projects disturbing more than 5,000 square feet, the Maryland Department of the Environment (MDE) will be contacted to establish an approved sediment and erosion control plan. These plans will be developed by a professional engineer and identify the specific control measures that will be in place during construction to minimize erosion and sedimentation. UMD is also responsible for obtaining a

General Discharge Permit for Stormwater Associated with Construction Activity from MDE for projects that will disturb one or more acres of earth

The second category of erosion or sedimentation problems involves areas that may experience nuisance erosion due to inadequate conveyance, steep slopes, or insufficient vegetative stabilization. Areas of erosion will be identified during the Quarterly Routine Facility Inspection and Annual Inspection. All inspection and evaluation forms are included in the appendices of this SWPPP. Maintenance will be conducted on an as needed basis.

3.6 Management of Runoff

While the UMD SWPPP encompasses only six (6) smaller drainage areas within the campus, stormwater runoff is managed throughout the entire campus. UMD maintains a system of devices to manage stormwater runoff. This system includes, but is not limited to grass swales, bioretention areas, stormwater ponds, stormwater inlets and conveyances, oil/water separators, direct connections to sanitary sewer systems, and outfalls. A considerable number of the stormwater inlets at UMD have inlet protection to minimize particulates or materials from being discharged. The stormwater management system is designated on the Site Map in Appendix B.

In conjunction with UMD's system of stormwater management, UMD implements the following: an individual permit that is specifically tailored to controlling the University's discharge of wastewater to surrounding surface waters (State Discharge Permit No. 08-DP-2618); a NPDES Phase II MS4 general permit which covers the discharge of stormwater run-off from land, pavement, building rooftops and construction sites on campus (Permit No. 05-SF-5501); a permit for the discharge of backwash from the University pools (Permit No. 12-SI-7192); a SPCC Plan; an IDDE Plan; and, as required, site-specific Sediment & Erosion Control Plans. BMPs associated with the additional permits are located in Appendix N.

3.7 Salt Storage Piles or Piles Containing Salt

As described in Section 1.4, UMD maintains a salt storage facility within DA2. The structure is walled on three sides, with one open entrance. Approximately 600 tons of rock salt are stored within the salt dome and is typically delivered in the fall for storage until it is needed in the winter months. Re-fill orders are placed on an "as-needed" basis. The salt dome has structural BMPs in place in order to divert and redirect stormwater from entering the storage area.

3.8 12-SW Sector-Specific Non-Numeric Effluent Limits

For purposes of the 12-SW Permit, UMD is primarily classified as industrial Sector AD.b: School Bus Maintenance Facilities. The other sectors associated with UMD include Sector F: Primary Metals; Sector K: Hazardous Waste Treatment, Storage, or Disposal Facilities; Sector O: Steam Electric Generating Facilities; Sector P: Land Transportation and Warehousing; and Sector AD.a: Department of Public Works and Highway Maintenance Facilities.

These sectors requires additional control measures and/or technology-based effluent limits, outlined in Appendix D of the 12-SW. These control measures include:

- Good Housekeeping has been addressed in Section 3.3 of the SWPPP
- O.4.2 Delivery Vehicles has been addressed in Section 3.3.1 of the SWPPP
- O.4.3 Fuel Oil Unloading Areas has been addressed in Section 3.3.2 of the SWPPP
- O.4.4 Chemical Loading and Unloading has been addressed in Section 3.3.3 of the SWPPP
- O.4.5 Miscellaneous Loading and Unloading Areas has been addressed in Section 3.3.4 of the SWPPP
- O.4.6 Liquid Storage Tanks has been addressed in Section 3.3.5 of the SWPPP
- O.4.7 Large Bulk Fuel Storage Tanks has been addressed in Section 3.3.6 of the SWPPP
- O.4.8 Spill Reduction Measures has been addressed in Section 3.3.7 of the SWPPP
- O.4.10 Residue-Hauling Vehicles has been addressed in Section 3.3.8 of the SWPPP
- P.3.1.1 Vehicle and Equipment Storage Areas has been addressed in Section 3.3.9 of the SWPPP
- P.3.1.2 Fueling Areas has been addressed in Section 3.3.10 of the SWPPP
- P.3.1.3 Material Storage Areas has been addressed in Section 3.3.11 of the SWPPP
- P.3.1.4 Vehicle and Equipment Cleaning Areas has been addressed in Section 3.3.12 of the SWPPP
- P.3.1.5 Vehicle and Equipment Maintenance Areas has been addressed in Section 3.3.13 of the SWPPP

3.9 Employee Training

Pollution prevention training is necessary to ensure that employees are aware of their impact to stormwater, their responsibilities to prevent pollution, and methods for controlling pollution releases. Training sessions are held annually or as needed for UMD's P2 team members.

Training topics include the following:

- Spill response
- Good housekeeping practices
- Material management practices

All training is organized and coordinated by the UMD Environmental Affairs unit. SPCC training will be performed as outline in the UMD SPCC Plan. Other training sessions will be held as needed to address specific topics of interest.

The training materials for UMD stormwater pollution prevention training sessions are included in Appendix K.

3.10 Potable Water Discharges

UMD maintains an extensive life safety program through its Facilities Management Department. Life Safety staff are responsible for the maintenance and NFPA inspections/testing of fire protection equipment including fire hydrants, fire pumps and fire sprinkler systems. However, the UMD Piped Services group of Facilities Management handles all maintenance and repairs of the fire hydrants. The NFPA testing requires flushing of the hydrants to remove accumulated solids and to ensure the equipment is operating at required pressures. As part of the required testing, Life Safety tests one third of the campus hydrants annually and will calculate flow from these discharges and maintains records of the flow rates.

In addition to the hydrant testing/maintenance, Life Safety tests sprinkler systems and their associated pumps on an annual basis. Moreover, Piped Services also performs periodic maintenance of water mains, which includes the periodic flushing as part of system maintenance.

The NPDES permit #08-DP-2618 authorizes UMD to discharge potable water from the testing/maintenance of its fire protection equipment. The permit requires the implementation of a pollution prevention plan with technology-based best management practices (BMPs). This SWPPP will satisfy the pollution prevention plan requirement and the BMPs that will be implemented include:

- Water dechlorination and/or aeration prior to discharge.
- Direct the discharge in a manner that it will not cause soil erosion.
- Prior to discharging, clean any paved area that will come in contact with the discharged water in order to reduce the amount of pollutants picked up by the discharge.
- Maintain records of all discharges, including the dates, quantity of water discharged and BMPs implemented.

A BMP fact sheet describing the details of these practices is included in Appendix N.

3.11 Non-Stormwater Discharges

Non-stormwater discharges are strictly prohibited under sector specific regulations unless covered by an additional NPDES/ State discharge permit. University of Maryland is covered by a Phase II MS4 NPDES Permit (Permit No. MD0063801 or 05-SF-5501). Please reference the non-stormwater inspection report for further information located in Section 2.3.

SECTION 4: SCHEDULES AND PROCEDURES FOR MONITORING

UMD is not required to perform sector specific benchmark monitoring (12-SW permit, Appendix D, Sector AD.a, AD.b, F, K, O, and P). Visual monitoring will begin on the first full monitoring period six months after the registration acceptance of the 12-SW permit. If the visual monitoring parameters indicate the need for a corrective action, then the Environmental Affairs Unit will review the selection, design, installation, and implementation of BMPs and stormwater controls to determine if modifications are necessary to meet the effluent limits in the 12-SW Permit.

1. **Sample Location(s).** Outfall #001SW through Outfall #013SW; substantially identical outfalls are to be sampled in accordance with Part III.C.5.b.iv of the 12-SW permit (Appendix C) regarding substantially identical outfalls.

2. **Monitoring Schedules.** Once per outfall, per quarter.

3. **Procedures**. Visual monitoring samples are to be collected from each outfall within 30 minutes of a measurable storm event by qualified personnel during each quarter. A measurable storm event is defined as an event where there is an actual discharge from the site that follows the preceding storm event by 72 hours. Monitoring is conducted utilizing sampling procedures consistent with 12-SW Part V. C (Appendix C) and USEPA's Industrial Stormwater Monitoring and Sampling Guide (Appendix L). Additional sampling training should be conducted along with other mandatory training and is included in Appendix K.

SECTION 5: INSPECTIONS

5.1 Routine Facility Inspections (Quarterly Site Inspection)

Routine site inspections are to be conducted quarterly, with at least one inspection in a calendar year occurring during a stormwater discharge. Routine inspections are to be completed by ESSR and problem areas are identified on the inspection sheets. P2 Team members supplement these inspections by evaluating the effectiveness of stormwater management controls in their work areas. Routine inspections review the effectiveness of the SWPPP and help to maintain best management practices.

The inspection sheets include a signed certification that the Site is in compliance with this SWPPP and the 12-SW permit or else a corrective actions report (Appendix M) is to be prepared and submitted with the inspection.

A member of the Environmental Affairs Unit will conduct quarterly inspections of the six regulated drainage areas at UMD to ensure stormwater management controls are in place and functioning. In addition to the documented inspections, personnel at UMD will conduct visual inspections as part of their daily job functions to ensure areas are clean and maintained. Documentation of all Quarterly and Annual inspections is maintained in the SWPPP by the Environmental Affairs Unit and stored at the Environmental Services Building (Building #344). Sample routine inspections are available in Appendix G.

See Section 5.4 and Appendix N for further information regarding corrective actions.

5.2 Quarterly Visual Inspection (Quarterly Water Sampling)

Visual inspections of stormwater at UMD will be performed quarterly. Once each quarter, a member of the Environmental Affairs Unit will collect a stormwater sample from each regulated stormwater outfall and the sample will be visually assessed. A Quarterly Visual Monitoring Form is to be completed for each sample.

Samples will be taken from each outfall within 30 minutes of a measurable storm event by a member of the Environmental Affairs Unit. In the case of snowmelt, samples are taken during a period of measurable discharge. The completed Quarterly Visual Monitoring Forms and a time stamped photograph of each sample are to be updated and maintained in the SWPPP in Appendix F. A sample Quarterly Visual Monitoring Form and Visual Monitoring Procedures are found in Appendix F.

See Section 5.4 and Appendix N for further information regarding corrective actions.

5.3 Comprehensive Site Compliance Evaluation (Annual Site Inspection)

In addition to routine inspections, a Comprehensive Site Compliance Evaluation will be conducted annually to verify that the description of potential pollutant sources is accurate, the drainage map has been updated to reflect current conditions (Appendix B), and the controls to reduce pollutants identified in the SWPPP are being implemented and are adequate. The annual comprehensive site compliance evaluation can replace one routine quarterly inspection. Environmental Affairs personnel will conduct annual written site compliance evaluations to verify the accuracy of the information contained within this document and the effectiveness of stormwater controls. The inspection will be completed by filling out the Comprehensive Site Investigation sheet attached in Appendix H.

The Annual Comprehensive Site Compliance Evaluation includes a signed certification that the Site is in compliance with this SWPPP and the 12-SW permit or else a corrective actions report (Appendix M) is to be prepared and submitted with the inspection. The Non-Stormwater Discharge Evaluation will be performed, as described in Section 2.3, at the same time as the annual Comprehensive Site Compliance Evaluation.

Corrective action triggers and procedures are described in Section 5.4. Corrective Action Reports will be stored in the SWPPP at the Environmental Services Building. See Section 5.4 and Appendix N for further information regarding corrective actions.

5.4 Corrective Actions

Corrective Actions are mandatory modifications that are made to stormwater controls and BMPs to improve stormwater management to meet 12-SW permit conditions on-site. The 12-SW Permit Part IV requires that Corrective Actions be performed and reported when any of the following triggering conditions under A or B occurs:

A. If any of the following conditions occur, you must review and revise the selection, design, installation, and implementation of your control measures to ensure that the condition is eliminated and will not be repeated in the future:
    1. an unauthorized release or discharge (e.g., spill, leak, or discharge of non-stormwater not authorized by this or another NPDES permit) occurs at your facility;
    2. a discharge violates a numeric effluent limit;
    3. for the discharge to meet applicable water quality standards;
    4. an inspection or evaluation of your facility by an MDE official determines that modifications to the control measures are necessary to meet the non-numeric effluent limits in this permit; or
    5. you find in your routine facility inspection (Part V.A.1), quarterly visual assessment (Part V.A.3), or comprehensive site inspection (Part V.A.2) that your control measures are not being properly operated and maintained.

B. If any of the following conditions occur, you must review the selection, design, installation, and implementation of your control measures to determine if modifications are necessary to meet the effluent limits in this permit:
    1. construction or a change in design, operation, or maintenance at your facility significantly changes the nature of pollutants discharged in stormwater from your facility, or significantly increases the quantity of pollutants discharged; or
    2. the average of four quarterly sampling results exceeds an applicable benchmark. If less than four benchmark samples have been taken, but the results are such that an exceedance of the four quarter average is mathematically certain (i.e., if the sum of quarterly sample results to date is more than four times the benchmark level) this is considered a benchmark exceedance, triggering this review.

For Corrective Action overview, deadlines, and reporting see Appendix N.

SECTION 6: SWPPP CERTIFICATION

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

Name: _____ Title: _____

Signature: _____ Date: _____

SECTION 7: SWPPP MODIFICATIONS

Revision	Date	Details / Comments
Revision 01	July 2017	SWPPP update and modification for compliance with 12-SW