THE UNIVERSITIES AT SHADY GROVE

Department of Facilities Management

ILLICIT DISCHARGE DETECTION AND ELMINATION (IDDE) PLAN

April 2020
Updated April 2021

Table of Contents

Appendices:

Appendix A General Location Map

Appendix B Site Map and Outfall Photo Log

Appendix C USG Illicit Discharge and Connection Stormwater Ordinance

Appendix D USG 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 Universities at Shady Grove (USG) 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. 13-SF-5501).

This Illicit Discharge Detection and Elimination (IDDE) plan is designed to identify and effectively eliminate illicit discharges and connections to USG'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 USG's IDDE program, along with public outreach and reporting, helps combat these potential illicit discharges. USG treats some of its

stormwater discharges using various BMPs, including oil-grit separators, bioretention, retention pond, sand filters, and infiltration berms.

USG began in 1992 as part of the University of Maryland, University College. In 2000, it reformed under its present name. The campus is located in a suburban area, bounded by a mixture of commercial and institutional areas on all sides. USG is bordered by Darnestown Road to the north and east, Traville Gateway Drive to the west, and Gudelsky Drive to the south. The campus currently consists of 4 academic buildings and a parking garage on approximately 30 acres of land. A site vicinity map is included in Appendix A. It should be noted that the Shady Grove Campus consists of two distinct Universities – 1) USG and 2) the University of Maryland Institute for Bioscience and Biotechnology Research (IBBR). USG and IBBR share a property, owned by the State of Maryland and work jointly together to share their property management responsibilities.

The stormwater drainage system at USG consists of intermittent surface flow and catch basins located throughout the campus. Approximately 14 acres (47%) of the campus is considered impervious. The campus maintains a MS4 that consists of seven (7) outfalls. The outfalls discharges to the Gudelsky Retention Pond located onsite, which discharges offsite to the Piney Branch stream. Water the Piney Branch ultimately flows to 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.

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 USG 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.

USG will utilize AutoCAD, GPS, and GIS technologies to map all conveyance systems and outfalls. All outfall locations will then be incorporated into USG'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. USG 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 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 USG's IDDE. However, Montgomery County Code of Ordinances Part II, Chapter 19 encompasses its stormwater management ordinances. These ordinances can be found at:

http://montgomeryco-md.elaws.us/code/coor_ptii_ch19

3.3 City Ordinances

There are currently no city ordinances that apply to USG's IDDE. However, Rockville Code of Ordinances Chapter 19, Article IV encompasses its stormwater management ordinances. These ordinances can be found at:

https://library.municode.com/md/rockville/codes/code_of_ordinances?nodeId=CICO_CH19SECOSTMA_ARTIVSTMA

3.4 University Policies

While the Universities at Shady Grove does not have a specific ordinance relating to illicit discharge detection and elimination. Furthermore, USG is subject to not just our own policies and procedures, but those of University Maryland, College Park (UMD) and University System of Maryland (USM) as well. Therefore, Section VI of the UMD Policies grants authority to the Department of Environmental Safety, Sustainability and Risk (ESSR) to ensure compliance with all environmental regulations. Therefore, USG facilities management will implement this IDDE Plan since it is required by its NPDES General Permit for Discharges from Small MS4s (State Permit No. 13-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. USG will not consider items listed in Table 1 as illicit discharges. If USG determines any of these activities to be illicit discharges in the future, USG 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

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 security at USG who then routes the call to facilities management. Reported spills will be tracked by facilities management 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:

4.3.2 Reporting

If an illicit discharge is identified during a routine inspection or while responding to a notification, facilities management will write a report for each illicit discharge and its location. Facilities management will maintain a database that documents all activities associated with the USG'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 USG's annual report.

Any illicit discharges in violation of USG'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 100% 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.

4.4.2 Source Identification

When identifying any illicit discharges or the source of any violations for their NPDES permit, facilities management 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. Facilities management 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, facilities management can determine the direction from which the discharge originates, facilities management 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 facilities management 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 USG's security desk who will then route the call to facilities management. 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 USG'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:

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 USG facilities management staff from the general public;
- A report from a USG staff member or student; or
- Results of outfall screening.

The determination of if an illicit discharge has occurred will be made by USG facilities management staff. In all cases of an illicit discharge, the USG 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 USG 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 USG 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 USG outfall mapping to identify the drainage area of the illicit discharge. Cross reference the mapping with the USG 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.

USG 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 USG to keep records of all stormwater program activities and IDDE records for a minimum of five (5) years. USG 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 USG facilities management office. Electronic copies will be available on demand.

SECTION 5: CORRECTIVE ACTIONS & ENFORCEMENT

In order to maintain compliance with the permit, facilities management has the authority to notify entities within the USG 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 USG, facilities management 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-USG entities are involved in the deficiencies and/or illicit discharges, facilities management 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. USG's facilities management department will enforce compliance with the IDDE Plan and work with the party/parties to obtain compliance. Facilities management, 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 local police department for further action, in conjunction with referral to MDE.

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

SECTION 6: PUBLIC EDUCATION

6.1 Public Education and Outreach

USG 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 USG'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 staff can contribute to USG'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

USG shall implement and maintain a public involvement and participation program. USG 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, USG 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. USG requires stormwater training for staff involved in activities that are considered a high risk for potential stormwater pollution.

SECTION 7: STAFF TRAINING

The MS4 Permit requires USG to provide annual training to applicable field personnel in recognition and reporting of illicit discharges. USG requires stormwater training for staff involved in activities that are considered a high risk for potential stormwater pollution. USG facilities management 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, USG facilities management 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: Nico Washington **Title**: Chief Operating Officer, Administration and Financial Services

Signature:  **Date**: March 29, 2021

SECTION 9: IDDE EVALUATION AND MODIFICATIONS

Revision	Date	Details / Comments
Revision 00	April 2020	Original IDDE Plan
Revision 01	April 2021	Updated to reflect personnel changes and MDE comments

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

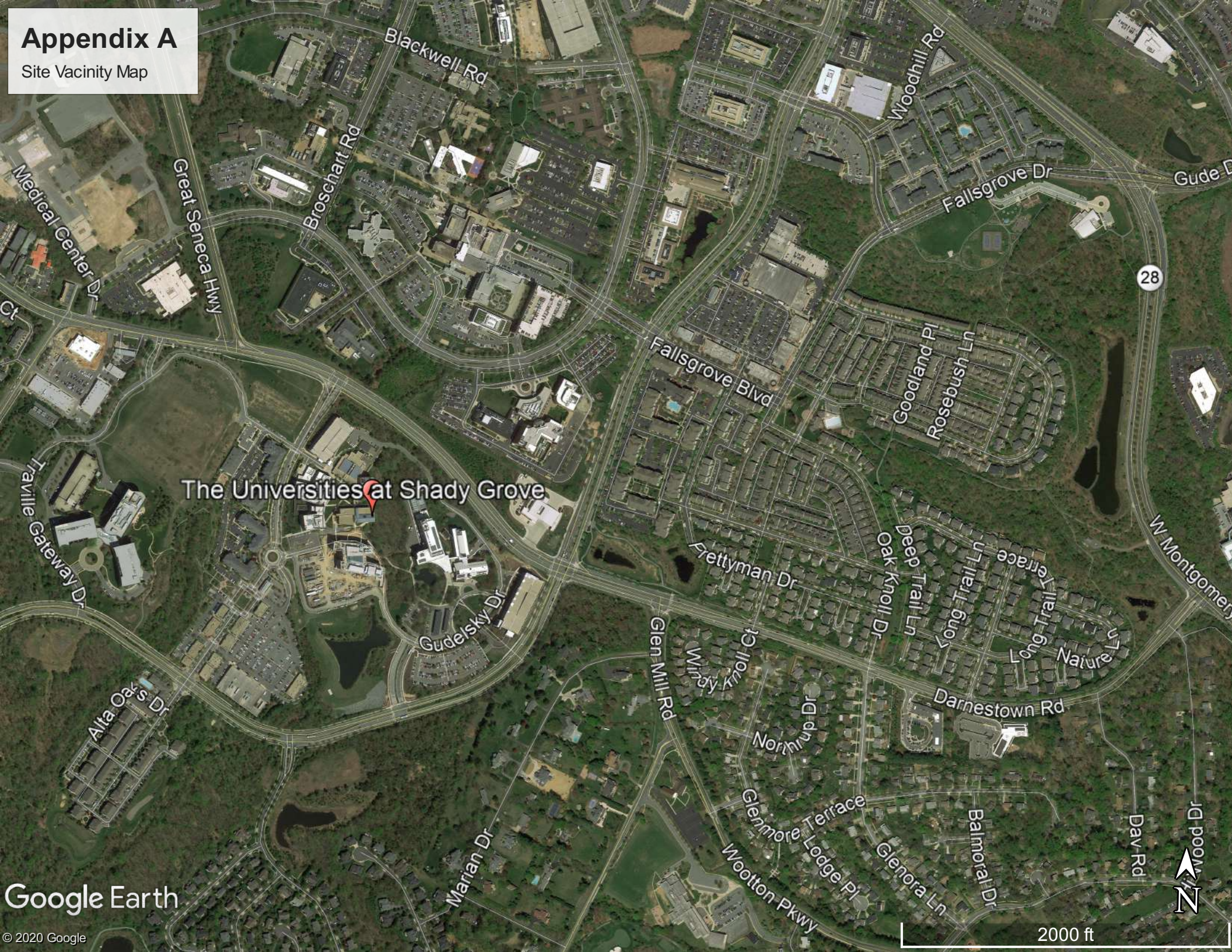
New England Interstate Water Pollution Control Commission. *Illicit Discharge and Elimination Manual: A Handbook for Municipalities.* January 2003. Lowell, MA. http://www.neiwpcc.org/neiwpcc_docs/iddmanual.pdf

APPENDIX A

SITE VICINITY MAP

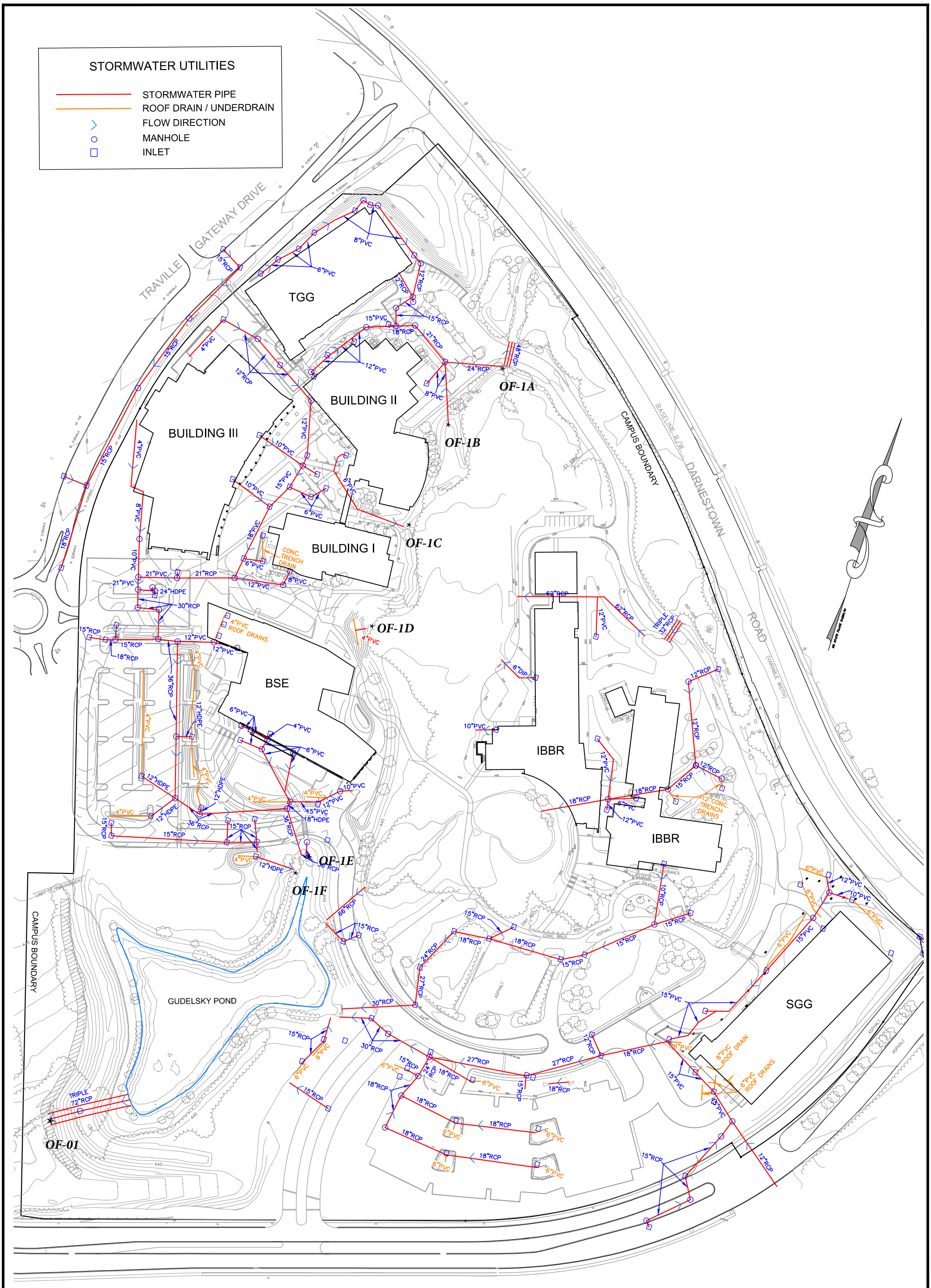
Appendix A

Site Vacinity Map



APPENDIX B

SITE MAP



MARYLAND ENVIRONMENTAL SERVICE	SURVEYED BY	**STORMWATER UTILITIES**	PROJECT NO.
	DRAWN BY JBB	**UNIVERSITY OF MARYLAND, SHADY GROVE** BALTIMORE COUNTY, MARYLAND	SCALE: 1" = 150'
	CHECKED BY JW		SHEET 1 OF 1
	DATE SEPTEMBER 23, 2020	**GEOSPATIAL & ENGINEERING DIVISION** 259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340	DRAWING NO.

MARYLAND ENVIRONMENTAL SERVICE

USG / IBBR Stormwater Network

N

0 0.0225 0.045 0.09 Miles

- Outfall
- Manhole
- Inlet
- Head/Endwall
- Culvert
- Control Structure
- Pipe
- Hydraulic Connection
- Drain
- Ditch

MD iMAP, DoIT

MARYLAND ENVIRONMENTAL SERVICE

USG / IBBR BMP Locations

N

0 0.0225 0.045 0.09 Miles

BMP Type

- Infiltration Berms
- Rainwater Harvesting
- Bioretention
- Green Roof
- Infiltration Trench
- Micro-Bioretention
- Oil Grit Separator
- Retention Pond
- Sand Filter

APPENDIX C

UMD IDDE POLICIES

The University of Maryland Policies, Section VI: General Admiration, Chapter 21.00(A): Policies and Procedures for Environmental, Safety and Health Management states:

A. Department of Environmental Safety

The Department of Environmental Safety (DES) is responsible for the administration of the campus policies and is accountable for the University's compliance with all environmental, safety and health regulations. It carries out this mission by providing technical, regulatory and related management services to the colleges/schools and departments who have a shared responsibility for operational accountability for regulatory compliance. DES assists the colleges/schools and departments in the development and implementation of programs, including training, emergency response, and analysis of specific problems so that compliance is practical at the unit level. DES is the unit responsible for all official University contact with external governmental regulatory agencies concerned with workplace health, safety and environmental compliance. In consultation with University legal counsel and, as required, representation by the Office of the Attorney General, DES shall coordinate all University responses to regulatory agencies' inquiries, complaints, lawsuits and other formal proceedings. By working with a Policy Committee, DES is instrumental in the design and implementation of an effective environmental safety program. DES reports to the Vice President for Administrative Affairs.

This policy grants the Department of Environmental Safety (DES) {recently changed to the Department of Environmental Safety, Sustainability, and Risk (ESSR)} the authority to maintain the University's compliance with environmental regulations. Therefore, ESSR will implement the IDDE requirements of the General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems. With regards to illicit discharge detection and elimination, ESSR will implement the following requirements of their MS4 permit:

C. Illicit Discharge Detection and Elimination. Permittees shall develop, implement, and maintain a program to identify and eliminate illicit storm drain system connections and non-stormwater discharges to the maximum extent practicable. The program developed to satisfy this minimum control measure shall contain elements to field screen storm drain system outfalls, inspect the storm drain system for the purpose of identifying the source of any illicit discharges, eliminate any illegal connection or illicit discharge to the storm drain system, and enforce penalties where appropriate. The illicit discharge program shall also contain components to address illegal dumping and spills. This minimum control measure may be implemented and maintained by the permittee or by another responsible entity. Additionally, a permittee may coordinate its efforts to identify and eliminate non-stormwater discharges with those of the surrounding County performing similar activities under an individual NPDES municipal separate storm sewer system permit. If the responsibilities for complying with this minimum control measure are to be shared between the permittee and another responsible entity, the relationship and specific duties of all participating entities shall be outlined in the NOI submitted to MDE according to PART IL of this

general permit. At a minimum, a program developed to implement illicit discharge detection and elimination to satisfy this control measure shall contain the following:

1. A map showing the extent of the storm drain system;

2. The legal means to provide for entering onto private property to investigate and eliminate illicit storm drain system discharges;

3. Procedures to field screen storm drain outfalls on a consistent basis;

4. Inspection procedures for identifying the source of any suspected illicit discharges to the storm drain system;

5. Enforcement and penalty procedures;

6. Procedures to address spills and illegal dumping;

7. Means to inform public employees, businesses, and the general public of illegal discharges and improper waste disposal; and

8. Any other components deemed necessary to ensure that non-stormwater discharges to the municipal separate storm sewer system are either permitted by MDE under NPDES or eliminated.

Regardless of whether a permittee develops its own program or relies on another responsible entity to satisfy this minimum control measure, the permittee shall cooperate regarding discharges entering or leaving its jurisdictional boundaries or Waters of the State. The intent of this program is to control non-stormwater discharges to and from municipal separate storm sewer systems. Therefore, it is essential that a permittee covered by this general permit cooperate actively in instances where storm drain systems are interconnected with entities covered under this or any other NPDES stormwater permit.

Additionally, 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 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.

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 will refer the issue to the Maryland Department of the Environment for enforcement action.

APPENDIX D

ILLICIT DISCHARGE INCIDENT TRACKING SHEET

Illicit Discharge Incident Tracking Sheet

Incident ID:

Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:

Caller contact information (*optional*):

Incident Location *(complete one or more below)*

Latitude and longitude:

Stream address or outfall #:

Closest street address:

Nearby landmark:

Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	

Narrative description of location:

Upland Problem Indicator Description

☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			

Narrative description of problem indicators:

Suspected Violator (name, personal or vehicle description, license plate #, etc.):

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

APPENDIX E

OUTFALL INPECTION FORM

University of Maryland
Illicit Discharge Detection & Elimination Program
Outfall Screening S.O.P.

Background:

The Outfall Inspection Form will be completed for at least **50% of the outfalls each year**. 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 inspections are performed **during dry weather** (i.e. no precipitation within the past 48 hours) to record descriptive and quantitative information about each outfall inspected in the field. When a "dry weather flow" is observed, a jurisdiction must initiate an investigation to discover the source. If the source is determined to be illicit, the jurisdiction is required to take corrective measures to eliminate the discharge and initiate enforcement actions when necessary.

A discharge to a MS4 is illicit if it is not composed entirely of stormwater. Illicit discharges can originate from a number of different types of sources, including incorrect plumbing, broken infrastructure, inappropriate business practices, and illegal dumping. However, certain discharges are exempt and the University of Maryland is permitted for several other discharges, which are summarized in the Table 1 and Table 2.

Procedure:

1. Photograph each outfall
2. Complete the "Outfall Inspection Form" for each outfall
3. If an illicit discharge is suspected, report to UMD Environmental Affairs for investigation.

Equipment needed:

- Waders
- Measuring tape
- Bucket or bottle for flow rate
- Stopwatch
- Camera
- Thermometer
- pH probe
- Ammonia test strips
- Chlorine meter
- sterile gloves

Table 1.
Exempt Non-Stormwater Discharges

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

Table 2.
Non-Stormwater Discharges Authorized by Other Permits

Dechlorinated discharges from potable water sources
Air conditioning condensate
Steam Condensate
Contact / Non-contact cooling water
Swimming pool discharge

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours: Last 48 hours:		
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

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

☐ Industrial ☐ Open Space

☐ Ultra-Urban Residential ☐ Institutional

☐ Suburban Residential Other: _____

☐ Commercial 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: _____	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)?

APPENDIX F

IDDE TRAINING MATERIALS

Illicit Discharge Detection and Elimination (IDDE) Training

2020

Overview

- What is an IDDE?
- Key terms
- Applications
- Key components
- Reporting processes

What is an IDDE?

- A plan to identify and locate sources of non-storm water discharge into storm drains.

IDDE Applications

- … to effectively eliminate illicit discharges and connections to UMD's Municipal Separate Storm Sewer System (MS4) permit.

- Establish methods to control pollutants entering the storm sewer system to comply with National Pollutant Discharge Elimination System (NPDES).

Key Terms: Illicit Discharge

- Any direct or indirect non-storm water discharge to the MS4.

1. A storm drain with measurable flow during dry weather **containing pollutants and/or pathogens**.
2. Has a unique **discharge frequency**, **composition**, and **mode of entry** into an MS4 system.
3. Originates from **"generating sites"**, or specific sources areas.

Key Terms: Illicit Discharge (continued)

- **IMPORTANT**: Not all dry-weather storm drain flows are classified "Illicit discharges"…
  - because they do not all contain pollutants/ pathogens.
- Field testing/ water quality sampling is needed to identify or confirm an illicit discharge.

Key Terms: Discharge Frequency

- How often the illicit discharge occurs:
  - Continuous
    - Occurs most to all the time, easy to detect
  - Intermittent
    - Occurs short time (few hours/day or days/year), harder to detect
  - Transitory
    - Occurs rarely (single event, spill), hardest to detect

Key Terms: Discharge flow type

- Dry discharges can contain one or more type of flow.
- Each flow type has a distinct chemical fingerprint:

Table 1: Comparative "Fingerprint" (Mean Values) of Flow Types

Flow Type	Hardness (mg/L as CaCO3)	NH_3 (mg/L)	Potassium (mg/L)	Conductivity (µS/cm)	Fluoride (mg/L)	Detergents (mg/L)
Sewage	50 (0.26)*	25 (0.53)*	12 (0.21)*	1215 (0.45)*	0.7 (0.1)*	9.7 (0.17)*
Septage**	57(0.36)	87 (0.4)	19 (0.42)	502 (0.42)	0.93 (0.39)	3.3 (1.33)
Laundry Washwater	45 (0.33)	3.2 (0.89)	6.5 (0.78)	463.5 (0.88)	0.85 (0.4)	758 (0.27)
Car Washwater	71 (0.27)	0.9 (1.4)	3.6 (0.67)	274 (0.45)	1.2 (1.56)	140 (0.2)
Plating Bath (Liquid Industrial Waste**)	1430 (0.32)	66 (0.66)	1009 (1.24)	10352 (0.45)	5.1 (0.47)	6.8 (0.68)
Radiator Flushing (Liquid Industrial Waste**)	5.6 (1.88)	26 (0.89)	2801 (0.13)	3280 (0.21)	149 (0.16)	15 (0.11)
Tap Water	52 (0.27)	<0.06 (0.55)	1.3 (0.37)	140 (0.07)	0.94 (0.07)	0 (NA)
Groundwater	38 (0.19)	0.06 (1.35)	3.1 (0.55)	149 (0.24)	0.13 (0.93)	0 (NA)
Landscape Irrigation	53 (0.13)	1.3 (1.12)	5.6 (0.5)	180 (0.1)	0.61 (0.35)	0 (NA)

** The number in parentheses after each concentration is the Coefficient of Variation; NA = Not Applicable*
*** All values are from Tuscaloosa, AL monitoring except liquid wastes and septage, which are from Birmingham, AL.*
Sources: Pitt (project support material) and Pitt et al. (1993)

Key Terms: Mode of entry

Direct

- Discharge directly connected to storm drain by a pipe.
  - Sewage cross-connections
  - Industrial/ commercial cross-connections
  - Straight pipe

Indirect

- Discharge enters via storm drain inlets or infiltrating into a pipe.
  - Groundwater seepage
  - Spills entering inlet
  - Direct dumping inlet
  - Outdoor washing
  - Non-target irrigation (landscaping)

Key components of an IDDE

1. Stormwater mapping
2. Ordinances
3. Detection procedures
4. Corrective action
5. Public education
6. Recordkeeping
7. Staff training

1. Stormwater mapping

Many communities lacked up-to-date mapping resources. It was found that mapping layers such as storm sewers, open drainage channels, waters of the U.S., outfalls, and land use were particularly useful to conduct and prioritize effective field investigations.

USG utilizes GIS and CAD programs to keep up-to-date maps of the campus, along with multiple layers.

2. Ordinances

Table 8: Codes and Ordinances with Potential Links to IDDE

- Fire codes
- Hazardous wastes/spill controls
- Health codes
- Industrial storm water compliance
- Litter control regulations
- Nuisance ordinances
- Plumbing codes
- Pollution prevention permitting requirements
- Restaurant grease regulations
- Septic system regulations
- Sewer/drain ordinances
- Storm water ordinance
- Street/highway codes

To establish legal authority, communities will need to either develop a new IDDE ordinance or modify an existing ordinance that addresses illicit discharges. Language from existing ordinances that addresses illicit discharges should be incorporated or cross-referenced into any new IDDE ordinance to minimize conflicts and confusion. Furthermore, existing code ordinances may need to be amended or superseded to be consistent with the new IDDE ordinance.

3. Detection Procedures

- Notification of Spills
- Reporting during routine inspections
  - Outfall Reconnaissance Inventory (ORI) will be conducted, at a minimum, once per permit term
  - Monthly inspections for SPCC plan

- Source Identification
  - Tracking, field investigation, smoke test, dye test, etc.

4. Corrective Action

- University Ordinance should provide for escalating enforcement measures to notify operators of violations and to require corrective action.
- Most illicit discharge corrective actions involve some form of infrastructure modification or repair.
  - Direct discharges are those such as cross-connections, and piping.
  - Indirect discharges are those such as pump station failure or sewer break.

4. Corrective Actions Continued

- Once the source of an illicit discharge has been identified, steps should be taken to fix or eliminate the discharge. The following four questions should be answered for each individual illicit discharge to determine how to proceed:

1. Who is responsible?
2. What methods will be used to fix it?
3. How long will it take?
4. How will removal be confirmed?

5. Public Education

- NPDES Phase II permits require public education and outreach and public involvement.
- Public education to advertise the hotline and training to educate employees across departments and agencies
- Dispersal of information brochures on USG's IDDE
- Labeling storm drains and outfalls to make the public aware.

6. Recordkeeping

- The NPDES Phase II Permit requires USG to keep records of all stormwater program activities and IDDE records for a minimum of five (5) years.
- USG 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 USG facilities management office. Electronic copies will be available on demand.

7. Staff Training

- The MS4 Permit requires USG to provide annual training (once a year) to applicable field personnel in recognition and reporting of illicit discharges.

- Sign in sheet for records

Reporting Processes

- Reporting an incident
- Outfall inspections
- Investigation and Response Procedures

Reporting an incident-

Illicit Discharge Hotline Incident Tracking Sheet

Incident ID:				
Responder Information				
Call taken by:			Call date:	
Call time:			Precipitation (inches) in past 24-48 hrs:	
Reporter Information				
Incident time:			Incident date:	
Caller contact information (*optional*):				
Incident Location *(complete one or more below)*				
Latitude and longitude:				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description	**Secondary Location Description:**			
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks	
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):		
Narrative description of location:				
Upland Problem Indicator Description				
☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage		
☐ Wash water, suds, etc.	☐ Other: _____			
Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

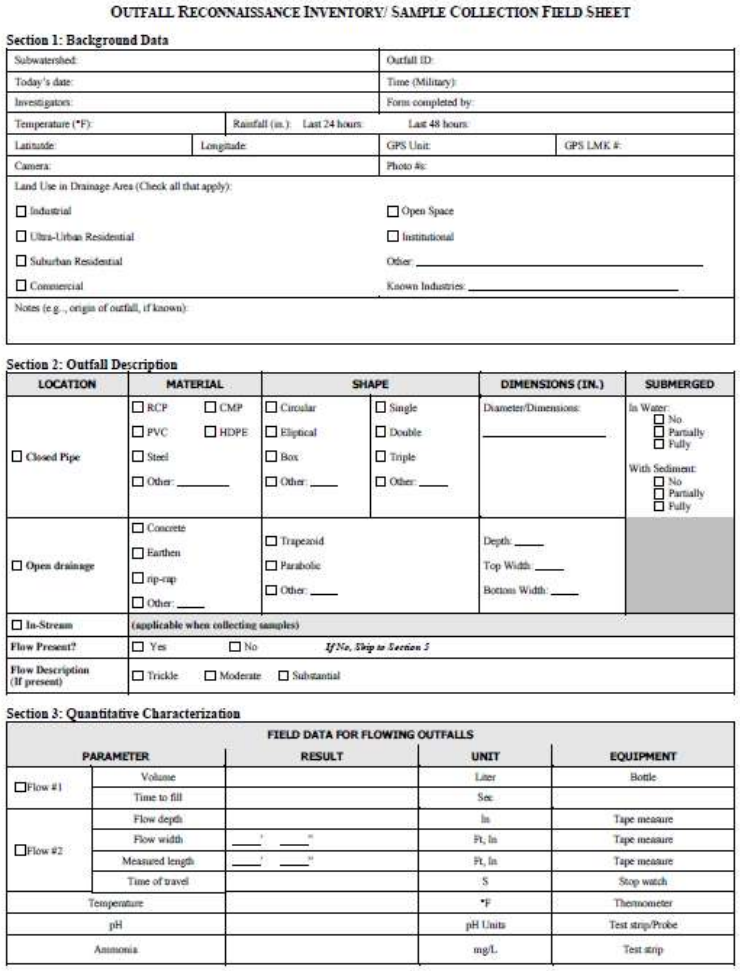
1. Immediately notify the discharge hotline
2. Complete the Illicit Discharge Hotline Incident Tracking Sheet (left)
   - (located in Appendix D of the USG IDDE plan).

Reporting an incident- (continued)

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

1. Immediately notify the discharge hotline
2. Complete the Illicit Discharge Hotline Incident Tracking Sheet (left)
   - **(located in Appendix D of the USG IDDE plan).**

Outfall Inspections- Outfall Form



OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

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

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

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

Section 2: Outfall Description

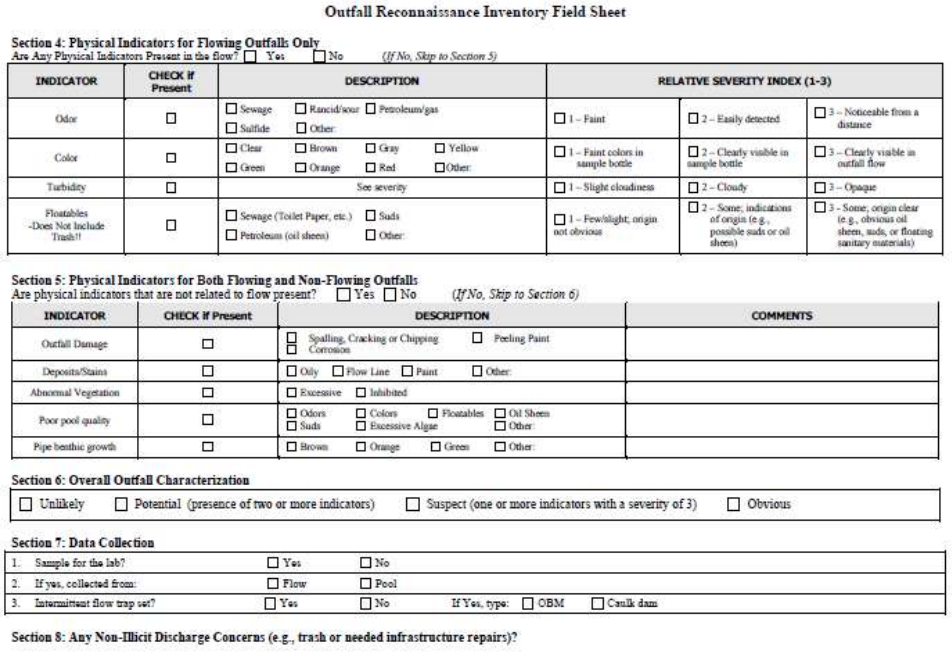
LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ 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 3*				
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

- Section 1: Background Data of the site/ outfall location
- Section 2: Description of outfall
  - (e.g. material, size, shape, etc.)
- Section 3: Quantitative characterization-
  - (e.g. measuring flow, temperature, pH, and ammonia)
  - Make sure to note the type of equipment!

Outfall Inspections- Outfall Form (continued…)



Outfall Reconnaissance Inventory Field Sheet

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)?

(Located in Appendix E of the USG IDDE plan)

- Section 4: Physical indicators for flowing outfalls
  - (i.e. Odor, color, turbidity, floatables)
- Section 5: Physical indicators for BOTH flowing and non-flowing
  - anything unrelated to the outfall flow
- Section 6: Overall outfall characterization
  - pollution indicators present
- Section 7: Data Collection
  - describes sample collection
- Section 8: non- illicit discharge concerns
  - (e.g. issues surrounding outfall not pertaining to the actual flow/water)

Key References

- For further information, refer to:
  - The Universities at Shady Grove's IDDE plan
  - "Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments" by Center for Watershed Protection and Robert Pitt