Environmental Safety, Sustainability & Risk

MS4 Permit Number 13-SF-5501 (MDR055501)

UNIVERSITY OF MARYLAND

MS4 Permit

(Municipal Separate Storm Sewer System)

- Phase I MS4 Permit: Population over 100,000
  - Montgomery County, Prince Georges County

- Phase II MS4 Permit
  - Small Municipalities
  - *State and Federal Agencies (e.g., USM Institutions)*

Overview

Became effective 10/31/2018

- Small MS4 located within a permit area (Phase II)
  - Owned/operated by the State of MD
  - Already covered under a NPDES Small MS4 permit (05-SF-5501)
  - Developed land >5 Acres and >10% impervious area property wide
    - ~40% is impervious of the 1,335 acres of land (Main Campus)
- 5 year term unless administratively extended

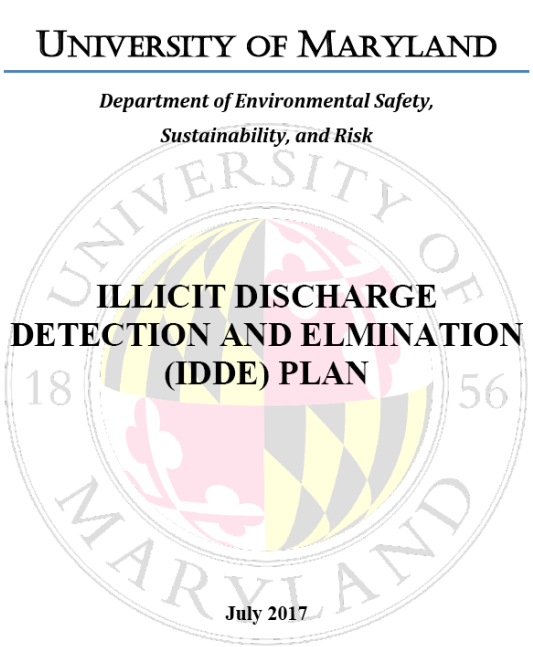
Requirements of the MS4 Permit

- Implementation of stormwater management programs and restoration actions to control discharge of pollutants from regulated MS4s.
- Identify BMPs in place to help mitigate stormwater discharge
- MS4 Six Minimum Control Measures (MCMs)
  - Personnel Education and Outreach
  - Public Involvement and Participation
  - Illicit Discharge Detection and Elimination Program
  - Construction Site Stormwater Runoff Control
  - Post Construction Stormwater Management
  - Pollution Prevention and Good Housekeeping

In addition, there is a 20% impervious area restoration requirement known as the Chesapeake Bay Restoration (CBR)

Key components of an IDDE

1. Stormwater Mapping
2. Ordinances
3. Detection Procedures
4. Corrective Action
5. Public Education
6. Recordkeeping
7. Staff Training


UNIVERSITY OF MARYLAND

Department of Environmental Safety, Sustainability, and Risk

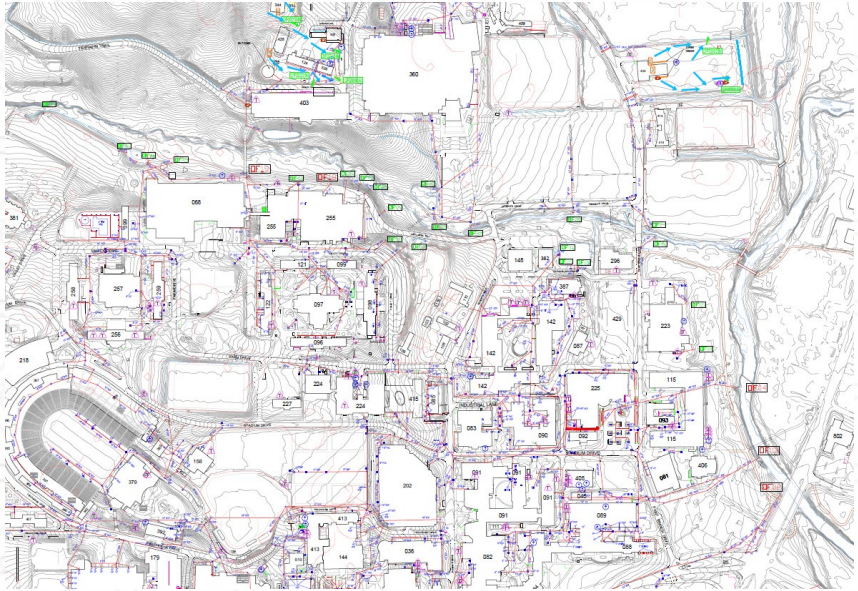
ILLICIT DISCHARGE DETECTION AND ELMINATION (IDDE) PLAN

July 2017

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.

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



Ordinances

Table 8: Codes and Ordinances with Potential Links to IDDE	
• Fire codes	• Pollution prevention permitting requirements
• Hazardous wastes/spill controls	• Restaurant grease regulations
• Health codes	• Septic system regulations
• Industrial storm water compliance	• Sewer/drain ordinances
• Litter control regulations	• Storm water ordinance
• Nuisance ordinances	• Street/highway codes
• Plumbing 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.

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 NPDES permit
  - Quarterly inspections for Stormwater permit
- Source Identification
  - Tracking, field investigation, smoke test, dye test, etc.

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.

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:
  - Who is responsible?
  - What methods will be used to fix it?
  - How long will it take?
  - How will removal be confirmed?

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 UMD's IDDE
- Labeling storm drains and outfalls to make the public aware.

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.

Staff Training

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

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.):

- Immediately notify the discharge hotline
- Complete the Illicit Discharge Hotline Incident Tracking Sheet (left)
  - Located in Appendix D of the UMD IDDE Plan

IDDE Tracking form

IDDE TRACKING FORM

Date Illicit Discharge Observed/Reported:_____ Outfall # (if applicable):_____

Description of IDDE: _____

_____

Date of Investigation: _____

Was the Source found? ☐ Yes ☐ No

If "Yes", please describe: _____

_____

Was IDDE Resolved? ☐ Yes ☐ No

If "Yes", please explain how it was resolved (Please include any personnel or outside parties contacted or involved):

_____

_____

_____

If "No", please explain why it was not resolved: _____

_____

_____

Is any follow-up action required? ☐ Yes ☐ No

If "Yes", please explain: _____

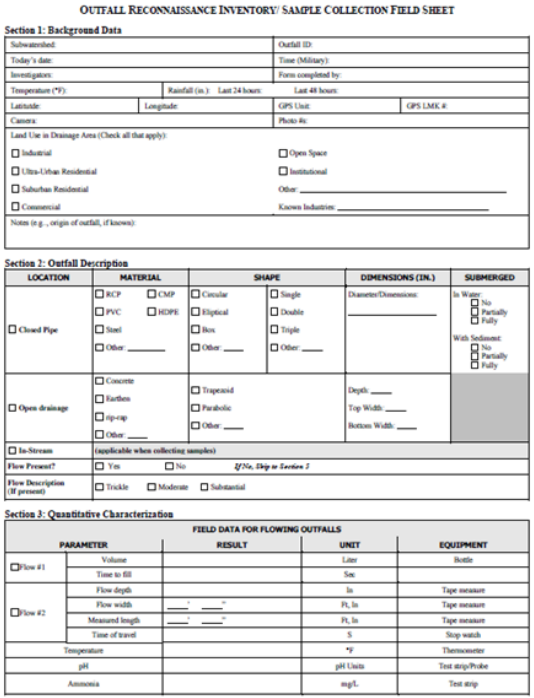
_____

Date investigation closed: _____

Attach photos to this form and retain for records.

- After an illicit discharge is suspected, UMD ESSR staff will confirm the discharge.
- ESSR-EA Staff **must** fill out the IDDE tracking form located in Appendix G of the UMD IDDE plan.

Outfall Inspections



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
- ☐ 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 ☐ Elliptical ☐ 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
  - Material, size, shape, dimensions
- Section 3: Quantitative characterization
  - Only if there is flow
    - Temp, flow, pH, ammonia

Outfall Inspections

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)?

- 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

2018 Outfall Screening Photos

Outfall 03

Outfall 30

No ID

No ID

Future Implications

Chesapeake Bay Restoration

- 20% reduction OR treatment of stormwater
  - 35% of UMD is impervious
  - Do satellite properties count?
- How much impervious is treated? (i.e. stormwater ponds, infiltration, etc.)
  - Assuming 20% (More likely less)
  - Roughly 75 Acres (5x The size of McKeldin Mall)
- Who/What/Where?
- Must be completed by 2025
- What is treatment?
  - lbs of Nitrogen and phosphorus reduced
  - Removing impervious surfaces
  - Treating stormwater/improvements

Permit Term ORI

- Need to update map of current and new outfalls
  - Verify the stormwater lines
  - Remove “Outfalls” that discharge into on property structures (i.e stormwater ponds and conveyances)
- Identify and eliminate illicit connections

How to Reach Us

- www.essr.umd.edu
- Call 301-405-3960 during business hours
- Call UMPD Communications at 301-405-3555 to reach on-call ESSR staff after business hours.
- Email safety@umd.edu