
D- VIMS IDDE Program

Illicit Discharge Detection and Elimination Program

Prepared for **The College of William and Mary
Virginia Institute of Marine Sciences
Office of Facilities Management**
1208 Greate Road
Gloucester Point, Virginia 23062

Prepared by **VHB**
Two Columbus Center
4500 Main Street, Suite 400
Virginia Beach, Virginia 23462
757.490.0132

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List of Abbreviations

Title	Abbreviation
Best Management Practice.....	BMP
Clean Water Act	CWA
Center for Watershed Protection.....	CWP
Virginia Department of Conservation and Recreation	DCR
Virginia Department of Environmental Quality.....	DEQ
Environmental Protection Agency.....	EPA
Federal Water Pollution Control Act.....	FWPCA
Geographic Information System	GIS
Illicit Discharge Detection and Elimination	IDDE
Illicit Discharge Potential.....	IDP
Maximum Extent Practicable	MEP
Municipal Separate Storm Sewer System.....	MS4
Notice of Intent	NOI
National Pollution Discharge Elimination System.....	NPDES
Stormwater Management.....	SWM
Stormwater Management Program.....	SWMP
Stormwater Pollution Prevention Program	SWPPP
Total Maximum Daily Load.....	TMDL
Virginia Department of Transportation	VDOT
Virginia Institute of Marine Sciences	VIMS
Vanasse Hangen Brustlin.....	VHB
Virginia Stormwater Management Handbook	VSMH
Virginia Stormwater Management Program	VSMP
Water Quality Act	WQA

Introduction

This Illicit Discharge Detection and Elimination (IDDE) Program has been developed as a requirement of the National Pollutant Discharge Elimination System (NPDES) and is overseen in the State of Virginia by the Department of Environmental Quality's (DEQ) permit for Small Municipal Separate Storm Sewer Systems (MS4's) located in urbanized areas. The purpose of this Program is to implement a campus wide strategy to find, fix and prevent illicit discharges. An overall campus map has been included in **Appendix A**. The following is a four part definition of an illicit discharge:

1. Illicit Discharges are defined as storm drains that have measurable flow during dry weather periods, which contain pollutants or pathogens that could pose a significant threat to the community. A storm drain with measurable flow that does not contain any pollutants is simply considered a discharge.
2. Illicit Discharges typically have a unique frequency, composition and mode of entry into the storm drain system.
3. Illicit Discharges are usually caused when the sewage from a disposal system interacts with the storm drain system. A variety of monitoring techniques can be used to locate and eliminate illegal sewage connections. These techniques trace sewage flows from the outfall back upstream the storm drain system to reach the source of the illicit discharge.
4. Illicit Discharges of other pollutants are produced from specific source areas and operations known as "generating sites". Depending on the regulatory status of specific "generating sites", education, enforcement and other pollution prevention techniques can be used to manage this class of illicit discharges.

Per 9VAC25-890-40, the IDDE Program is to be updated for the recent General Permit for Stormwater Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, effective date July 1 2013, expiration date June 30, 2018 (**Appendix B**). Implementation of the components of this Program is required as a condition of the Permit. The DEQ has been granted authority to administer the VSMP and is therefore the regulatory authority overseeing the implementation of this Program. The Program is also subject to all requirements of the Virginia Stormwater Management Act and the Virginia Stormwater Management Program (VSMP) Permit Regulations.

Permit Background/Regulatory Considerations

In 1972, Congress passed the Federal Water Pollution Control Act (FWPCA), also known as the Clean Water Act (CWA), to restore and maintain the quality of the nation's waterways. The ultimate goal was to make sure that the river and streams were fishable, swimmable, and drinkable. In 1987, the Water Quality Act (WQA) added provisions to the CWA that allowed the EPA to govern stormwater discharges from MS4s. In 1990, the EPA disseminated rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) stormwater program.

Under the Phase 1 NPDES regulations, permits for stormwater discharges from municipal separate storm sewer systems were required for eleven "large" and "medium" municipalities in Virginia. The "large" municipalities (250,000+ populations) are Fairfax County, Virginia Beach and Norfolk. The "medium" municipalities (from 100,000 to 250,000 populations) are Arlington County, Prince William County, Henrico County, Chesterfield County, Hampton, Newport News, Portsmouth, and Chesapeake. The Phase 2 stormwater regulations froze the population thresholds for "large" and "medium" municipal separate storm sewer systems at the 1990 Census level, so no additional municipalities will be designated into these categories.

Permits for applications for Phase 1 municipal separate storm sewer systems permit applications required the municipalities to propose a comprehensive Stormwater Management Program (SWMP). This program is required to consist of structural and non-structural measures to control the discharge of pollutants from the storm sewer system to the Maximum Extent Practicable (MEP) and to effectively prohibit non-stormwater discharges to separate storm sewer systems. The Phase 1 permits required the implementation of the SWMP, required storm event monitoring to be conducted by the municipality, and required the municipality to regularly assess the effectiveness of the various stormwater controls employed by the municipality.

Phase 2 regulations required permits to be issued to Small Municipal Separate Storm Sewer Systems (MS4s) located in "urbanized areas" (as defined by the U.S. Census Bureau's 2000 Census). Small MS4s include systems owned by municipalities, federal facilities, State facilities (including VDOT), and public universities. In addition, any Small MS4 located in a Phase 1 "large" or "medium" municipality is required to be permitted under the Phase 2 regulations.

Permits for regulated small municipal separate storm sewer systems require the development, implementation and enforcement of a SWMP that includes the following "six minimum control measures":

1. Public education and outreach on stormwater impacts
2. Public involvement/ participation
3. Illicit discharge detection and elimination
4. Construction site stormwater runoff control
5. Post-construction stormwater management in new development and redevelopment
6. Pollution prevention/good housekeeping for municipal operations.

Regulated Small MS4 permit applications require the applicant to identify:

1. Proposed best management practices and measurable goals for each of the "six minimum control measures"
2. The timing of the implementation of each control measure
3. The person or persons responsible for implementing the Stormwater Management Program (SWMP).

The 2004 Virginia legislature unanimously passed House Bill 1177 transferring regulatory authority of the NPDES programs related to MS4s and construction activities from the State Water Control Board to the Soil and Water Conservation Board and transferred oversight of these programs from the Department of Environmental Quality (DEQ) to the Department of Conservation and Recreation (DCR). This transfer became effective January 29, 2005. Program oversight was transferred again from DCR to DEQ effective July 1, 2013. As a result, DEQ is responsible for the issuance, denial, revocation, termination and enforcement of NPDES permits for the control of stormwater discharges from MS4s and land disturbing activities under the VSMP. The General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, in accordance with 9VAC25-890, is effective starting July 1, 2013 and applies to all VSMP Permits for Discharges of Stormwater from Small MS4s until the permit expiration date of June 30, 2018.

Existing Resource Audit

Campus Stormwater Outfalls

The Virginia Institute of Marine Sciences campus is comprised of approximately **41.45 acres** of land situated on the east and west sides of State Route 17 in the Town of Gloucester Point, Virginia. The campus has twelve outfalls, all draining to the York River. The campus receives approximately 62.70 acres of drainage from land both inside and outside the campus boundaries.

The East Campus covers approximately **29.56 acres** of the VIMS campus and collects runoff from an area of approximately 33.69 acres. The East Campus is generally bound by private residences and forested land to the north, the York River to the east, Gloucester Point Park to the south, and State Route 17 to the west. In addition to overland flow, the East Campus is drained by seven separate outfalls. The outfalls are considered to be the locations where individual storm sewer networks discharge runoff directly to the York River. Each outfall generally collects runoff from one of the major buildings or groups of smaller buildings on the East Campus. These outfalls are RCP conduits sized 12" and 18". The Seawater Research Lab, Nunally Hall, Watermen's Hall, Chesapeake Bay Hall, Andrews Hall, and Facilities Management Complex are located in the East Campus area.

The West Campus covers approximately **11.89 acres** of the VIMS campus and collects runoff from an area of approximately 29.01 acres. The West Campus is generally bound by private residences and forested land to the north, State Route 17 to the east, and the York River to the south and west. In addition to overland flow, the West Campus is drained by five separate outfalls. The outfalls are considered the locations where individual storm sewer networks discharge runoff directly to a boat basin. This boat basin outfalls to the York River. Each outfall generally collects runoff from one of the major buildings or groups of smaller buildings on the East Campus. These outfalls are 12" RCP conduits. The Field Support Center, Boat Shed, Dive Locker, Aquaculture Facility, and campus greenhouses are located in the West Campus area.

A summary of the outfalls throughout the VIMS campus is provided in *Table 1: Campus Outfall Summary*. Due to the coastal location of the VIMS campus, runoff generated on coastal portions of the VIMS campus discharges directly to the York River by way of sheet flow. Campus outfalls also service areas outside of VIMS maintained property. For further information on the outfall locations and drainage areas see **Appendix A**.

Table 1: Campus Outfall Summary

Outfall Number	Location	Description	Outfall Drainage Area (ac)
1	West Campus, Boat Basin Channel	12" RCP culvert to boat basin channel to York River	0.30
2	West Campus, Boat Basin Channel	Open channel to boat basin channel to York River	8.67
3	West Campus, Boat Basin	12" RCP culvert to boat basin to York River	0.62
4	West Campus, Boat Basin	12" RCP culvert to boat basin to York River	2.67
5	West Campus, Boat Basin	12" RCP culvert to boat basin to York River	2.57
	Overland Flow to York River		4.45
	Offsite		9.73
	TOTAL		29.01
6	East Campus, East of Andrews Hall	12" RCP culvert to York River	1.79
7	East Campus, East of Andrews Hall	12" RCP culvert to York River	1.56
8	East Campus, East of Chesapeake Bay Hall	12" RCP culvert to York River	1.32
9	East Campus, East of Watermen's Hall	12" RCP culvert to York River	2.58
10	East Campus, East of Watermen's Hall	12" RCP culvert to York River	1.42
11	East Campus	12" RCP culvert to York River	2.63
12	East Campus	18" RCP culvert to York River	3.75
	Overland Flow to York River		8.40
	Overland Flow to "Moat" Detention Basin		7.04
	Offsite		3.20
	TOTAL		33.69
	GRAND TOTAL		62.70

Current Resources and Future Needs

The Virginia Institute of Marine Sciences currently does not have a self-implemented policy in place to find, fix, and prevent illicit discharges. Illicit discharges are currently held to a minimum on the VIMS campus through a combination of existing ordinances, codes, regulations, and manuals. This Illicit Discharge Detection and Elimination Program establishes a Policy that establishes responsibility and legal authority for Illicit Discharge Detection and Elimination on the VIMS campus. This Program also establishes means and methods to identify and protect areas of the VIMS campus with high potential for illicit discharge, to detect and eliminate illicit discharges, and to establish program goals and strategies for future enforcement. The Program and Policy will be enforced by the **Director of the Office of Facilities Management (The Office)**.

During the development of this initial IDDE Policy and Program, an itemized procedure was developed for determining illicit discharge potential (IDP) risk levels throughout the VIMS campus. A number of strategies for mitigating risk were developed that will be applied based on an assigned IDP risk level. Dry weather field screening and laboratory methods were also created to test for illicit discharges at the various outfalls throughout the VIMS campus. Methods include specific field and laboratory tests and ways to optimize field assessments in order to gather accurate data and conclusive results. In addition, training for field staff in testing procedures were developed in order to gather accurate field data.

The Office will implement dry weather field screening methods to test for illicit discharges at campus outfalls. Department field personal will be trained to field analyze campus outfalls for illicit discharges annually using a standard set of metrics. In the event chemical testing of field samples is required, the Department will most likely utilize campus laboratories to perform testing. However, contract services from a private laboratory may be necessary. Based on price quote estimates, water quality testing is estimated at \$500 per water quality test. A single water quality test for all campus outfalls would cost a total of approximately \$6,000.

If a hazardous material is found in a sample, the **Gloucester Volunteer Fire and Rescue Squad** should be immediately notified. They can be reached at:

Phone: (804) 693-2148
Address: 6595 Main Street
Gloucester Courthouse, VA 23061
Email: gvfrs@gvfrs.gov

Illicit Discharge Detection and Elimination Policy

Section 1 Purpose and Intent

The purpose of this Policy is to provide for the health, safety, and general welfare of the community of the **Virginia Institute of Marine Sciences** through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This Policy establishes methods for controlling the introduction of pollutants into the Municipal Separate Storm Sewer System (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process. The objectives of this Policy are:

1. To regulate the contribution of pollutants to the MS4 by stormwater discharges by any user.
2. To prohibit Illicit Connections and Discharges to the municipal separate storm sewer system.
3. To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this Policy.

Section 2 Definitions

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

Authorized Enforcement Agency – Defined as the employees or designees of the Director of the **Virginia Institute of Marine Sciences Office of Safety and Environmental Programs**.

Best Management Practices (BMP's) - 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. BMP's 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 federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity - Activities subject to NPDES Construction Permits. Currently these include construction projects resulting in land disturbance of 5 acres or more. Beginning in March 2003, NPDES Storm Water Phase II permits will be required for construction projects resulting in land disturbance of 1 acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

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

Illegal Discharge - Any direct or indirect non-storm water discharge to the storm drain system, except as exempted within this Policy.

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

- Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drainage system. This includes, but is not limited to, any conveyances which allow any non-storm water 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.
- Any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Industrial Activity - Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b) (14).

Municipal Separate Storm Sewer System (MS4) – The system of conveyances (including sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches man-made channels or storm drains) owned and operated by the **Virginia Institute of Marine Sciences** and designed or used for collecting or conveying storm water, and that is not used for collecting or conveying sewage.

National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit – Defined as a permit issued by the EPA (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-Storm Water Discharge - Any discharge to the storm drain system that is not composed entirely of storm water.

Person - Means any individual, association, organization, partnership, firm, facility, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant - Anything which causes or contributes to pollution. Pollutants may include, but are not limited to:

- Paints, varnishes, and solvents; oil and other automotive fluids
- Non-hazardous liquid and solid wastes and yard wastes
- Refuse, rubbish, garbage, litter, or other discarded or abandoned objects, 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
- 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.

Storm Drainage System - Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to:

- Any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

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

Stormwater Management Plan - A document which describes the Best Management Practices 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 storm water, discharged from a facility.

Section 3 Applicability

This Policy shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by the *authorized enforcement agency*.

Section 4 Responsibility for Administration

The *authorized enforcement agency* shall administer, implement, and enforce the provisions of this Policy. Any powers granted or duties imposed upon the *authorized enforcement agency* may be delegated in writing by the Office Director of the *authorized enforcement agency* to persons or entities acting in the beneficial interest of or in the employ of the *authorized enforcement agency*.

Section 5 Compatibility with other Regulations

This Policy is not intended to modify or repeal any other policy, rule, regulation, ordinance or other provision of law. The requirements of this Policy are in addition to the requirements of any other policy, rule, regulation, ordinance or other provision of law, and where any provision of this Policy imposes restrictions different from those imposed by any other policy, rule, regulation, ordinance or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control.

Section 6 Severability

The provisions of this Policy are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this Policy or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this Policy.

Section 7 Ultimate Responsibility

The standards set forth herein and promulgated pursuant to this Policy are minimum standards; therefore this Policy does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

Section 8 Discharge Prohibitions

Prohibition of Illegal Discharges

No person shall discharge or cause to be discharged into the MS4 storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water. The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

1. The following discharges are exempt from discharge prohibitions established by this Policy:
 - Water line flushing or other potable water sources
 - Landscape irrigation or lawn watering
 - Diverted stream flows
 - Rising ground water
 - Ground water infiltration to storm drains
 - Uncontaminated pumped ground water
 - Foundation or footing drains (not including active groundwater dewatering systems)
 - Crawl space pumps
 - Air conditioning condensation
 - Springs
 - Non-commercial washing of vehicles
 - Natural riparian habitat or wet-land flows
 - Swimming pools (if dechlorinated - typically less than one PPM chlorine)
 - Fire fighting activities
 - Any other water source not containing Pollutants.

2. Discharges specified in writing by the *authorized enforcement agency* as being necessary to protect public health and safety.
3. Dye testing is an allowable discharge, but requires a verbal notification to the *authorized enforcement agency* prior to the time of the test.
4. The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

*The *authorized enforcement agency* may evaluate and remove any of the above exemptions if it is determined that they are causing an adverse impact.

Prohibition of Illicit Connections

1. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
2. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
3. A person is considered to be in violation of this Policy if the person connects a line conveying sewage to the MS4, or allows such a connection to continue.
4. Improper connections in violation of this Policy must be disconnected and redirected, if necessary, to an approved onsite wastewater management system or the sanitary sewer system upon approval of the *authorized enforcement agency*.
5. Any drain or conveyance that has not been documented in plans, maps, or equivalent, and which may be connected to the storm sewer system, shall be located by the owner or facility manager upon receipt of written notice of violation from the *authorized enforcement agency* requiring that such locating be completed. Such notice will specify a reasonable time period within which the location of the drain or conveyance is to be determined, that the drain or conveyance be identified as storm sewer, sanitary sewer or other, and that the outfall location or point of connection to the storm sewer system, sanitary sewer system or other discharge point be identified. Results of these investigations are to be documented and provided to the *authorized enforcement agency*.

Section 9 Watercourse Protection

Every person owning a facility through which a watercourse passes, or such person's manager/lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner, manager or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

Section 10 Industrial or Construction Activity Discharges

Submission of a Notice of Intent (NOI) to the Department of Environmental Quality (DEQ)

- Any person subject to an industrial or construction activity NPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the *authorized enforcement agency* prior to the allowing of discharges to the MS4.
- The operator of a facility, including construction sites, required to have an NPDES permit to discharge storm water associated with industrial activity shall submit a copy of the NOI to the *authorized enforcement agency* at the same time the operator submits the original NOI to the DEQ as applicable.
- The copy of the NOI may be delivered to the *authorized enforcement agency* either in person or by mailing to:

Notice of Intent to Discharge Storm Water
VIMS – Director of the Office of Safety and Environmental Programs
1208 Greate Road
Gloucester Point, VA 23062

- A person commits an offense if the person operates a facility that is discharging storm water associated with industrial activity without having submitted a copy of the NOI to do so to the *authorized enforcement agency*.

Section 11 Monitoring of Discharges

Applicability

This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity, to the MS4.

Access to Facilities

- The *authorized enforcement agency* shall be permitted to enter and inspect facilities subject to regulation under this Policy as often as may be necessary to determine compliance with this Policy. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the *authorized enforcement agency*.
- Facility operators shall allow the *authorized enforcement agency* ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge storm water, and the performance of any additional duties as defined by state and federal law.
- The *authorized enforcement agency* shall have the right to set up on any permitted facility such devices as are necessary in the opinion of the *authorized enforcement agency* to conduct monitoring and/or sampling of the facility's storm water discharge.
- The *authorized enforcement agency* has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.

- Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the *authorized enforcement agency* and shall not be replaced. The costs of clearing such access shall be borne by the operator.
- Unreasonable delays in allowing the *authorized enforcement agency* access to a permitted facility is a violation of a storm water discharge permit and of this Policy. A person who is the operator of a facility with a NPDES permit to discharge storm water associated with industrial activity commits an offense if the person denies the *authorized enforcement agency* reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this Policy.
- If the *authorized enforcement agency* has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this Policy, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this Policy or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the *authorized enforcement agency* may seek issuance of a search warrant from any court of competent jurisdiction.

Section 12 Requirements to Prevent, Control, and Reduce Storm Water Pollutants by the Use of Best Management Practices

The *authorized enforcement agency* will adopt requirements identifying Best Management Practices (BMP's) for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drain system, or waters of the U.S. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the MS4 drain system or watercourses through the use of these structural and non-structural BMP's. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMP's to prevent the further discharge of pollutants to the MS4. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMP's shall be part of a Stormwater Pollution Prevention Plan (SWPPP) as necessary for compliance with requirements of the NPDES permit.

Section 13 Notification of Spills

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or water of the U.S. Said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the *authorized enforcement agency* in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the *authorized enforcement agency* within three business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

*Failure to provide notification of a release as provided above is a violation of this Policy.

Section 14 Notice of Violation

Violations

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Policy. Any person who has violated or continues to violate the provisions of this Policy, may be subject to the enforcement actions outlined in this Policy or may be restrained by a Cease and Desist Order or otherwise abated in a manner provided by law.

In the event the violation constitutes an immediate danger to public health or public safety, the *authorized enforcement agency* is authorized to enter upon the subject property, without giving prior notice, to take any and all measures necessary to abate the violation and/or restore the property. The *authorized enforcement agency* is authorized to seek costs of the abatement as outlined in this Policy.

Warning Notice

When the *authorized enforcement agency* finds that any person has violated, or continues to violate, any provision of this Policy, or any order issued hereunder, the *authorized enforcement agency* may serve upon that person a written Warning Notice, specifying the particular violation believed to have occurred and requesting the discharger to immediately investigate the matter and to seek a resolution whereby any offending discharge will cease. Investigation and/or resolution of the matter in response to the Warning Notice in no way alleviates the alleged violator of liability for any violations occurring before or after receipt of the Warning Notice. Nothing in this subsection shall limit the authority of the *authorized enforcement agency* to take any action, including emergency action or any other enforcement action, without first issuing a Warning Notice.

Notice of Violation

Whenever the *authorized enforcement agency* finds that a person has violated a prohibition or failed to meet a requirement of this Policy, the authorized enforcement agency may order compliance by written notice of violation to the responsible person.

The Notice Shall Contain:

- The name and address of the alleged violator
- The address when available or a description of the building, structure or land upon which the violation is occurring, or has occurred
- A statement specifying the nature of the violation
- A description of the remedial measures necessary to restore the compliance with this Policy and a time schedule for the completion of such remedial action
- A statement of the penalty or penalties that shall or may be assessed against the person to whom the Notice of Violation is directed
- A statement that the determination of violation may be appealed to the *authorized enforcement agency* by filing a written notice of appeal within 7 (seven) days of service of the Notice of Violation.
- A statement specifying that, should the violator fail to restore compliance within the established time schedule, the work will be done by a designated governmental agency or contractor and the expense thereof shall be charged to the violator.

The Notice May Require (without limitation):

- The performance of monitoring, analyses, and reporting
- The elimination of illicit connections or discharges
- That violating discharges, practices, or operations shall cease and desist
- The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property
- Payment of a fine to cover administrative and remediation costs
- The implementation of source control or treatment BMP's

Section 15 Compensatory Action

In lieu of enforcement proceedings, penalties, and remedies authorized by this Policy, the *authorized enforcement agency* may impose alternative compensatory actions such as:

- Storm drain stenciling
- Attendance at compliance workshops
- Creek/Tributary cleanup (Adopt-A-Stream, Save the Bay, etc.)
- Any substitute form of environmental protection awareness/action deemed appropriate

Section 16 Suspension of MS4 Access

Emergency Cease and Desist Order

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Policy. If a person has violated or continues to violate the provisions of this Policy, the *authorized enforcement agency* may issue an order to the violator directing it immediately to cease and desist all such violations and directing the violator to:

- Immediately comply with all Policy requirements
- Take such appropriate preventative action as may be needed to properly address a continuing or threatened violation, including immediately halting operations and/or terminating the discharge.

Any person notified of an emergency order directed to it under this subsection shall immediately comply and stop or eliminate its endangering discharge. In the event of a discharger's failure to immediately comply voluntarily with the emergency order, the *authorized enforcement agency* may take such steps as deemed necessary to prevent or minimize harm to the MS4 or waters of the United States, and/or endangerment to persons or to the environment, including immediate termination of a facility's water supply, sewer connection or other utility service. The *authorized enforcement agency* may allow the person to recommence its discharge when it has demonstrated to the satisfaction of the *authorized enforcement agency* that the period of endangerment has passed, unless further termination proceedings are initiated against the discharger under this Policy. A person that is responsible, in whole or part, for any discharge presenting imminent endangerment shall submit a detailed written statement describing the causes of the harmful discharge and the measures taken to prevent any future occurrence, to the *authorized enforcement agency* within 10 (ten) days of receipt of the prerequisite for, taking any other action against the violator.

Suspension due to Illicit Discharges in Emergency Situations

The *authorized enforcement agency* may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the *authorized enforcement agency* may take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the United States, or to minimize danger to persons.

Suspension due to the Detection of Illicit Discharge

Any person discharging to the MS4 in violation of this Policy may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The *authorized enforcement agency* will notify a violator of the proposed termination of its MS4 access. The violator may petition the *authorized enforcement agency* for a reconsideration and hearing.

A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the authorized enforcement agency.

Section 17 Civil Penalties

In the event the alleged violator fails to take the remedial measures set forth in the Notice of Violation or otherwise fails to cure the violations described therein within 30 (thirty) days, or such greater period as the *authorized enforcement agency* shall deem appropriate, after the *authorized enforcement agency* has taken one or more of the actions described above, the *authorized enforcement agency* may impose a penalty not to exceed \$500 (five hundred dollars) for each day the violation remains unabated after receipt of the Notice of Violation.

Section 18 Criminal Prosecution

Any person that has violated or continues to violate this Policy shall be liable to criminal prosecution to the fullest extent of the law, and shall be subject to a criminal penalty of \$500 (five hundred dollars) per violation per day and/or imprisonment for a period of time not to exceed 90 (ninety) days. The *authorized enforcement agency* may recover all attorneys' fees court costs and other expenses associated with enforcement of this Policy, including sampling and monitoring expenses.

Section 19 Appeal of Notice of Violation

Any person receiving a Notice of Violation may appeal the determination of the *authorized enforcement agency*. The notice of appeal must be received within 7 (seven) days from the date of the Notice of Violation. Hearing on the appeal before the appropriate authority or his/her designee shall take place within 30 (thirty) days from the date of receipt of the notice of appeal. The decision of the appropriate authority or their designee shall be final.

Section 20 Enforcement Measures after Appeal

If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, within 30 (thirty) days of the decision of the appropriate authority upholding the decision of the *authorized enforcement agency*, then representatives of the *authorized enforcement agency* shall enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

Section 21 Cost of Abatement of the Violation

Within 30 (thirty) days after abatement of the violation, the owner of the facility will be notified of the cost of abatement, including administrative costs. The facility owner may file a written protest objecting to the amount of the assessment within 15 (fifteen) days. If the amount due is not paid within a timely manner as determined by the decision of the appropriate authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the facility and shall constitute a lien on the facility for the amount of the assessment.

Any person violating any of the provisions of this article shall become liable to the state by reason of such violation. The liability shall be paid in not more than 12 equal payments. Interest at the rate of 5 (five) percent per annum shall be assessed on the balance beginning on the first day following discovery of the violation.

Section 22 Violations Deemed a Public Nuisance

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Policy is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

Section 23 Remedies Not Exclusive

The remedies listed in this Policy are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the *authorized enforcement agency* to seek cumulative remedies. The *authorized enforcement agency* may recover all attorneys' fees court costs and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

Section 24 Adoption of Policy

This Policy shall be in full force and effect 30 (thirty) days after its final passage and adoption. All prior Policies and parts of Policies in conflict with this Policy are hereby repealed.

PASSED AND ADOPTED this _____ day of _____, 20____.

Illicit Discharge Potential

In this section, the ways to discover potential IDDE problem areas will be addressed and organized so the **Office of Facilities Management** can optimize their field time requirement. Listed below is a rating system for the campus areas illicit discharge potential.

- Low Risk – no known illicit discharge problems and mostly new infrastructure and facilities exist in these areas.
- Medium Risk – known problems are confined to a small area or a specific facility on site. Mainly newer infrastructure exists in these areas along with medium risk facilities.
- High Risk – Severe problems are expected in these areas due to known issues or very aged infrastructure along with high risk facilities.

Table 2: Illicit Discharge Potential (IDP) Screening Factors provides factors to help identify the Illicit Discharge Potential of any area of campus. This table does not indicate or guarantee an illicit discharge; it is only a guideline for detection.

Table 2: Illicit Discharge Potential (IDP) Screening Factors

Illicit Discharge Potential (IDP) – Screening Factors	
Factors	Definitions
1. Past Discharge Complaints	If there is a high frequency of past discharge complaints and past spill responses, these campus areas should be designated as having a high IDP (High Risk).
2. Poor Dry Weather Water Quality	High frequency that individual samples of dry weather water quality exceed allowances for bacteria, nutrients or conductivity. Other indicators are water clarity and color, presence of foam, oil sheen, slime, or odor. Also, if excessive vegetative growth or staining of the outfall banks or structures exists, this campus area should be labeled as having a high IDP (High Risk).
3. Storm Water Outfall Density	If a high frequency of outfalls along a stream exists then that area should be designated as having a high IDP (High Risk).
4. Age of Infrastructure and Facilities	If the average age of the facilities and infrastructure on campus is greater than 30 years, then these areas should be labeled as having a high IDP (High Risk).
5. Presence of Industrial Operations	Campus areas with over 5% industrial use that are more than 30 years old should be designated as having a high IDP (High Risk). If the infrastructure in place served an industrial area that is now being used as Institutional or Residential, it is likely the infrastructure was previously contaminated and should be labeled as having a high IDP (High Risk).
6. Aging and Failing Sewer Infrastructure	Anywhere on campus that sanitary sewer infrastructure exceeds its expected life (i.e. 30-50 years) then that campus area should be considered to have a high IDP (High Risk). Televising sewer lines and compiling information where existing piping is deteriorated or broken would be a good method for determining Illicit Discharges.

A color coded map of the campus and its storm sewer systems has been included in **Appendix C**. Storm piping colored red will be considered a High Risk system for Illicit Discharges. Yellow piping will indicate Medium Risk and green piping will indicate Low Risk. Likewise, if a campus area is shaded red, it has a higher potential for illicit discharges than a green shaded area does. These maps should help identify the areas of campus to focus on illicit discharge detection.

Program Goals and Implementation Strategies

The goals of this program should provide IDDE to the Maximum Extent Practical (MEP) for a five year permit cycle. These goals, at a minimum, should cover:

1. Overall Program Administration
2. Outfall Assessment
3. Preventing Illicit Discharges
4. Finding and Fixing Illicit Discharges

The NPDES Phase II Small MS4 Permit regulations grant communities considerable flexibility to develop program goals, as long as they are defined in a measurable way to gauge permit effectiveness and compliance. The goals should reflect the specific needs of VIMS. Ultimately, IDDE program goals should be linked to water quality goals. Some basic water quality goals should include:

- ✓ Keep raw or poorly treated sewage out of streams
- ✓ Reduce pollutant loads during dry weather to help meet the Total Maximum Daily Load (TMDL) for a specific water body.
- ✓ Meet bacteria water quality standards during dry weather flows.
- ✓ Reduce toxicant and other harmful pollutants to restore the abundance of aquatic life.

The five year program matrix is attached in **Appendix D**. These goals are just a guideline for IDDE and will not necessarily guarantee water quality goals will be met. If set goals are not being met, the IDDE program should transform and shift resources to other pollution prevention practices that would benefit the community more.

In order to meet the goals set forth in this program, proper implementation strategies must be developed. **The Office of Facilities Management** must develop a cost effective strategy that is tailored to the severity of illicit discharges found within the community. The Illicit Discharge Potential (IDP) table created in the previous section should be utilized in choosing the implementation strategy. The most important implementation strategy will be targeting, screening, educating and enforcing this Program to the campus areas with the highest IDP. *Table 3: Illicit Discharge (IDP) Implementation Strategies* summarizes community-wide implementation strategies based on the IDP risk evaluation.

Table 3: Illicit Discharge Potential (IDP) Implementation Strategies

Illicit Discharge Potential (IDP) Implementation Strategies	
Class	Action
Low IDP (Minimal Risk)	<ul style="list-style-type: none"> ✓ Conduct field screening of outfalls in the context of broader watershed assessment and restoration initiatives ✓ Integrate IDDE program efforts into more comprehensive watershed assessment and restoration efforts. ✓ Accomplish inventory and data collection efforts. ✓ Establish a hotline to report suspicious discharges.
Medium IDP (Some Risk)	<ul style="list-style-type: none"> ✓ Conduct limited sampling in the suspect areas. The most cost effective approach will be using campus laboratory services. ✓ Select a set of indicator parameters from the Desktop Assessment Section. ✓ Target education programs to the problem areas. ✓ Establish a hotline to report suspicious discharges.
High IDP (High Risk)	<ul style="list-style-type: none"> ✓ Establish a hotline to report suspicious discharges. ✓ Conduct and repeatedly screen areas. ✓ Apply a more rigorous sampling approach and utilize on-campus laboratories more heavily. ✓ Expand on the use of indicator parameters from the Desktop Assessment Section. ✓ Develop community wide educational programs to increase public awareness, target programs to specific problem areas. ✓ Cross Train VIMS employees to expand available effort.

Finding and Isolating Illicit Discharges

This section includes details on how to find an illicit discharge in the field and the appropriate laboratory strategies to identify particular pollutants. Screening of the campus outfalls is likely be the most effective way to find illicit discharges throughout the VIMS campus. An initial field assessment of the campus outfalls is necessary to document existing conditions and gather data. Field assessors should be able to locate continuous and intermittent streams. Areas of the VIMS campus that are labeled High Risk, or have a High Illicit Discharge Potential (IDP), should take assessment priority. Following the completion of the assessment of high risk areas, finish screening all campus outfalls. Take note of any outfalls with discharges of very high turbidity, irregular pH, strong odors, or unnatural colors. When obvious illicit discharges are found, field crews should take note and start working upstream to find where the source is and eliminate it. While traversing the campus, field crews should be looking for other more common illicit discharges like oil spills, un-permitted car washing or other harmful liquid spills. If these are encountered the appropriate abatement agency should be notified. *Table 4: Field Screening and Data Analysis Processes* provides a step by step process for conducting field screening. *Table 5: Dry Weather Field Screening Tests* summarizes visually and olfactory tests performed during dry weather field screening. *Table 6: Physical and Chemical Water Quality Tests* summarizes additional tests that can be performed in the field or laboratory to determine specific characteristics of outfall discharges.

Table 4: Field Screening and Data Analysis Processes

Field Screening and Data Analysis Processes	
Step	Strategies/Considerations
1. Acquire necessary mapping, equipment and staff	<ul style="list-style-type: none"> ▪ Use available campus mapping and documents included in Appendix C. ▪ Obtain spectrophotometer, basic camera, litmus paper, etc. ▪ One person field crew with specialized training at a minimum or two person crew with basic field training (ideal for screening)
2. Determine appropriate screening times	<ul style="list-style-type: none"> ▪ During dry season ▪ During times when trees are not shedding their leaves ▪ At a minimum of 48 hours after a rain event ▪ Times of low groundwater levels, generally in the middle of summer through fall
3. Identify where to begin screening	<ul style="list-style-type: none"> ▪ High Risk (High IDP) Areas – Screen these outfalls in the beginning of the first permit cycle. ▪ Medium Risk (Medium IDP) Areas – Screen drainage areas within first permit cycle. ▪ Low Risk (Low IDP) Areas – integrate field screening with broader watershed assessments.
4. Conduct field screening	<ul style="list-style-type: none"> ▪ Mark, document and photograph all campus outfalls. Use the appropriate forms located in Appendix E. ▪ Document outfall characteristics ▪ Monitor outfalls that have flows. Place sand bags at outfalls without flows to create a dam for water sampling. ▪ Sample all outfalls with potential problems on different days and at varying times of day. ▪ Track major problems back to the source immediately
5. Compile screening data	<ul style="list-style-type: none"> ▪ Develop database for documented field research ▪ Enter data into system as it is gathered ▪ Start lab analysis of samples taken
6. Designate screened outfalls	<ul style="list-style-type: none"> ▪ Designate outfalls screened as having a “definite, probable, potential or unlikely” illicit discharge potential. Focus efforts on definite and probable outfall areas first.
7. Document the extent of discharge problems	<ul style="list-style-type: none"> ▪ Compile data from field screening, laboratory testing and initial assessment of problem areas. Update initial assessment of outfalls as High, Medium or Low Illicit Discharge Potential (IDP).
8. Develop a monitoring strategy	<ul style="list-style-type: none"> ▪ Set a goal of monitoring 10% of flowing outfalls per calendar year until the entire campus has been inventoried. ▪ Repeat this screening each permit cycle.

Table 5: Dry Weather Field Screening Tests

Dry Weather Field Screening Tests	
Test for:	Use of Test
1. Odor	<ul style="list-style-type: none"> Indicates presence of sanitary wastewater, industrial flows, or biological chemicals.
2. Color	<ul style="list-style-type: none"> Depending on color, indicates presence of sanitary wastewater, petroleum, detergents or other pollutants.
3. Clarity	<ul style="list-style-type: none"> Indicates presence of suspended solids, petroleum, or detergents.
4. Floatables	<ul style="list-style-type: none"> Indicates presence of suspended solids, litter and debris, detergents, or petroleum.
5. Deposits or Stains	<ul style="list-style-type: none"> Indicates presence of pollutants over a long period of time.
6. Vegetation Condition	<ul style="list-style-type: none"> Health of adjacent vegetation indicates severity or duration of pollution event.
7. Structural Condition	<ul style="list-style-type: none"> Indicates age and status of outfall.
8. Biology	<ul style="list-style-type: none"> Indicates presence of sanitary wastewater, industrial flows, or biological chemicals.

Table 6: Physical and Chemical Water Quality Tests

Physical and Chemical Water Quality Tests	
Test for:	Use of Test
1. Conductivity	<ul style="list-style-type: none"> Indicates presence of Dissolved Solids, measured with a probe.
2. Ammonia	<ul style="list-style-type: none"> Indicates presence of Sanitary Wastewater if high levels are found, measured with common field test kit.
3. Surfactants	<ul style="list-style-type: none"> Indicates presence of Detergents or Soaps, measured with a common field test kit.
4. pH	<ul style="list-style-type: none"> Indicates Commercial or Industrial Flows (not a good indicator of Sanitary Wastewater), measured with a litmus test strip.
5. Temperature	<ul style="list-style-type: none"> Indicates Sanitary Wastewater or Industrial Flows, measured during cold weather with a thermometer.
6. Hardness	<ul style="list-style-type: none"> Indicates the difference between Natural and Treated waters, measured with a field test kit.
7. Chlorine	<ul style="list-style-type: none"> Indicates inflow from Potable Water sources (not a good indicator of Sanitary Wastewater), measured with a field test kit.
8. Fluoride	<ul style="list-style-type: none"> Indicates inflow from Potable Water sources (not a good indicator of Sanitary Wastewater), measured with a field test kit.
9. Potassium	<ul style="list-style-type: none"> Indicates presence of Sanitary Wastewater in high levels, measured with a field test kit.
10. Optical Brighteners	<ul style="list-style-type: none"> Indicates presence of Detergents or Soaps, measured with a common field test kit.
11. Bacteria (fecal coliform, E. Coli and enterococci)	<ul style="list-style-type: none"> Indicates presence of Sanitary Wastewater if high levels are found, measured with common field test kit.

Alternative/Supplemental tests for Illicit Discharges

This section includes some methods to use individually, or in conjunction with, screening and sampling of the campus storm sewer system. The methods below will help pinpoint the actual illicit connection once field screening and sampling has narrowed the illicit discharge, to a particular building or a reduced section of campus.

Dye Testing

This technique involves flushing non-toxic dye into toilets and sinks inside a building suspected of an illicit discharge. The receiving storm sewer and sanitary sewer manholes from the building will need to be opened for observation of the dyes once flushed down building drains. If the presence of dye is indicated within the storm sewer system, an illicit discharge must exist. Alternating dye colors will help identify where the particular illicit discharge is coming from within the building. Local officials and building personnel should be notified prior to the test. This testing method requires, at a minimum, two people with two-way radios. This method is very definitive in the results and is relatively cheap to perform.

Smoke Testing

This technique involves injecting non-toxic smoke into storm sewer lines and checking for the appearance of smoke from sanitary sewer vents in buildings or from cracks in the storm piping. The method can be performed by dropping a smoke bomb and forcing air through the system or by using smoke generating machines. Testing personnel should be stationed at suspected illicit discharge areas within buildings. Smoke could cause minor irritation to occupants of the buildings, so appropriate measures should be taken to inform the public prior to testing. This method will work to test either storm or sanitary sewer and can cover a broad area if needed. This method provides very definitive results and is relatively cheap to perform.

Video Inspection

This technique involves guiding mobile video cameras through the storm sewer system to observe potential illicit discharges. Observations can be recorded onto DVD's and watches at a later time. This technique is very thorough, typically definitive and unobtrusive to the public. However, it is relatively time consuming and expensive.

Fixing Illicit Discharges

The major goal of this program is to find, fix and prevent illicit discharges. In order to fix an illicit discharge problem, the source of the problem must first be isolated. Using the methods in the previous section, the illicit discharge should be narrowed down to a specific location, such as particular bathroom fixture or sewer vent within the building. Once the source of the problem outfall has been identified the immediate course of action should be to abate the discharge. However, studies have shown that it generally takes 30-90 days to abate an illicit discharge.

Removing the illicit discharge could prove costly for VIMS. Demolition of portions of the existing building could be required. All methods for removing illicit discharges should have an appropriate mix of education and enforcement involved in the process. Questions related to the illicit discharge and its abatement that should be answered include:

- Who is responsible for the illicit discharge
- What methods can be used to abate the discharge
- What timeframe will be required to abate the discharge
- What is the cost of abatement
- How will the abatement be confirmed

Preventing Illicit Discharges

Intermittent Illicit Discharges

In some cases, intermittent illicit discharges can be impossible to detect. In these situations the most productive course of action is to educate the members of the MS4 community about illicit discharges and how to identify high priority water quality issues. An effective IDDE program provides the public with education and participation in an effort to bestow a sense of environmental and community responsibility. In addition, an effective IDDE program provides strategies and goals to find solutions to high priority water quality issues. Some of the most frequent intermittent illicit discharges include:

1. Vehicular Pollutants:

The VIMS campus experiences daily traffic on campus roads and in parking lots. Vehicles that travel through the VIMS campus are in various states of operation and may be leaking various fluids such as oil, coolant, and fuel. All of these fluids are considered pollutants. Vehicular maintenance performed in campus parking areas has the potential to generate pollutants through fluid spills, waste debris and other sources. In addition, pollutant laden sediment collects on vehicles during normal use. When these sediments are washed off a vehicle by a storm event or an individual, they enter the storm sewer system.

All of these vehicular pollutants are generated on paved surfaces. However, as vehicles generally spend more time parked than in motion, parking areas are more likely to generate a greater amount of pollutants than roads. VIMS implements a number of structural and non-structural Best Management Practices (BMPs) to reduce, intercept, and treat pollutant laden runoff generated in parking areas. Structural BMPs are generally constructed practices and include wet retention ponds, bioretention basins, and other structural BMPs. Non-structural BMPs are generally policies and practices that aim to reduce the amount of pollutants that enter the VIMS storm sewer system. These BMPs generally include outreach programs, educational materials, and policies designed to restrict the generation of pollutants.

2. Litter and Debris:

Litter and debris are generated daily by the VIMS campus community. Litter and debris is not readily biodegradable and can potentially carry pollutants. Unless properly disposed of, litter and debris can enter the VIMS storm sewer network and eventually reach a campus outfall.

3. Sediment Deposition from Land Disturbing Activities:

Erosion and sediment control is required to be maintained by contractors during construction activities. In the event that an erosion control measure is installed incorrectly or fails during construction, sediments generated by land disturbing activities have the potential to enter the VIMS storm sewer system during a storm event. Sediments that enter surface waters increase turbidity, or cloudiness. Increased turbidity blocks sunlight and interferes with photosynthesis and other biological processes. In addition, sediments may also carry pollutants that can enter surface waters as well.

Every active construction site over 2,500 square feet is required to maintain a Construction Stormwater Pollution Prevention Plan (SWPPP) as required by the VSMP Construction General Permit. A Construction SWPPP provides a summary of the construction activity and methods in place to prevent and respond to pollution events.

Illicit Discharge Prevention

Outreach and Education to the community is the most efficient way to prevent illicit discharges campus wide. If educational materials are focused on specific facility types that are most likely to have illicit discharges, the process becomes even more valuable. These outreach materials should be designed to educate students, teachers and maintenance personnel about illicit discharge detection and elimination (IDDE) at these High Risk (High IDP) facilities. Typical materials include brochures, manuals, posters, pollution prevention vendors and signs. Facilities that would be good candidates for distributing and posting these materials would be buildings with laboratories, at loading docks for buildings that house harmful chemicals, landscaping departments, or any centralized location on campus that would be seen by the majority of the community members. One specific community outreach strategy that has proven effective is storm drain stenciling.

Storm Drain Stenciling alerts the public that everything they put in the drain eventually makes it to a receiving body of water that they would probably use for recreational purposes. This deters the community from depositing leaf litter, trash and other pollutants in the drainage systems. Stenciling will also improve watershed awareness and community stewardship and can be utilized everywhere. Simply a few trained volunteers could systematically stencil all the campus storm drains in a short time frame. Volunteers could be community service recipients, Chesapeake Bay Foundation members, fraternity and sorority members and the general student population. Stenciling programs have proven to be inexpensive, especially considering the positive effect they have on the community and the MS4.

A *Spill Prevention and Response Plan* is another useful method for any potential illicit discharge site. These plans describe the procedures to prevent illicit discharges at suspect sites. They also ensure that a proper procedure is outlined to abate a spill if it should occur. These plans standardize a procedure and educate facility members on how to implement the procedure. In the event of an illicit discharge emergency, a well-educated staff member will act swiftly and effectively to respond with little confusion or miscommunication. The plan should reflect an excellent understanding of how pollutants are handled at the facility and therefore provide a cleanup solution for a particular spill situation. The major components of a Spill Prevention and Response Plan are:

- A site map and evaluation of past spills
- An inventory of materials at the site
- A list of required spill response equipment
- Employee training

A good Spill Prevention and Response Plan will identify potential spill sites and the point they would enter the storm drain system (i.e. loading docks). It should also specify how the materials should be handled to ensure no illicit discharge will occur. It should describe the procedures required to abate a spill. Lastly, it should make certain that appropriate clean up equipment is available nearby for use.

Continuously Training Employees is an integral part of preventing illicit discharges in a community, particularly if there is turnover in staffing. A low budget solution may be to develop free or low cost videos to be watched when the employee is hired and periodically thereafter. Providing posters, signs and training brochures in multiple languages at staff only areas can prove beneficial for a low cost. Additional training could also be provided during winter, spring and summer break since there are fewer students and a lower demand for staff time. Employee training ideally could be conducted on a bi-annual basis to avoid illicit discharges and respond to spills.

IDDE Program Tracking and Evaluation

This portion of the Illicit Discharge Detection and Elimination (IDDE) Program will annually review the goals established in the Program Goals and Implementation Strategies section and in the matrix attached in **Appendix D**. Having an adaptive approach to IDDE is critical in the program's success. This enables the MS4 to abate the worst illicit discharges first in a cost effective manner. The first objective to keep the IDDE program functional throughout its useful life is to develop a tracking and reporting system.

A *Tracking and Reporting System* should be a user friendly interface to track, report, and provide response to illicit discharge problems. A Geographical Information System (GIS) is a likely candidate for establishing this database. This will allow for program directors to measure the effectiveness of the program and for field crews to store the data they continuously collect. Some important pieces of information when setting up the GIS database are:

- Coordinates of each outfall location
- Addresses of all facilities in the community
- Facility use and occupancy information
- Physical characteristics of the outfall (pipe size, material, condition, etc)
- Outfall Reconnaissance Inventory as data is collected
- Digital photos taken
- Follow up monitoring, information from following the ID upstream
- Any hotline or website complaints and the local response
- Maintenance and Inspection data
- Any enforcement actions taken

Secondly, *Evaluating the Program* on an annual basis will guarantee that program directors allocate their resources effectively. The most successful IDDE Programs are adaptable in response to ever changing discharge problems, pollutants and emerging technologies. The tracking system should be designed so that progress toward all the measurable goals can be reported. This way the community can see progress even when it appears that none is being made. The tracking system should include:

- Updated mapping to reflect outfalls found during field screens
- Surveyed streams with locations of dumping, suspect discharges and obvious illicit discharges.
- Litmus indicating results for specific screened outfalls
- Hotline usage and number of confirmed illicit discharges found through the service
- Costs for each of the program components
- Number of discharges abated
- Status of any enforcement options taken

Once the database has been set up for tracking and the system components have been monitored several years, it will be clear to the program director which aspects of the program are improving the water quality of the MS4. For example, if litmus indicating results turn up the greatest number of illicit discharges, maybe the director should allocate a larger percentage of funding for that particular program component, shifting the funds from another component that has proven less successful.

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