# Introduction

In most urban areas, the flow of water from a storm drain system is not a routine event during dry weather periods and, therefore, can be an indicator of illicit discharges (e.g., illegal dumping and unauthorized connections to a MS4). However, dry weather flows from an MS4 can be from other non-stormwater discharges, that would not be considered an illicit discharge and are a normal event for some MS4 outfalls (depending on location). These non-stormwater discharges could include: groundwater infiltration into the storm sewer system, irrigation return flow, foundation drain discharges, etc.

Using the assumption that dry weather flows are not conclusive indicators of possible illicit discharges in George Washington Memorial Parkway, outfall inspections will be conducted focusing on visually conspicuous evidence of possible illicit discharges to the MS4. Water quality sampling and analyses will not be conducted.

# Definition of an Illicit Discharge

An illicit discharge is a release to a municipal storm sewer or drainageway that is not composed entirely of stormwater.

Illicit discharges can be categorized as either direct or indirect.

* Examples of direct illicit discharges:
	+ Sanitary wastewater piping that is 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,
	+ A shop floor drain that is connected to the storm sewer, and
	+ A cross-connection between the sanitary sewer and storm sewer systems.
* Examples of indirect illicit discharges:
* An old and damaged sanitary sewer line that is leaking fluids into a cracked storm sewer line, and
* A failing septic system that is leaking into a cracked storm sewer line or causing surface discharge into the storm sewer.

Typical illicit surface discharges that may be observed by field personnel include:

* Overflows of sanitary sewerage systems;
* Untreated radiator flushing wastewaters;
* Untreated engine degreasing wastes;
* Over-application of fertilizers, pesticides or herbicides onto landscaping and impervious surfaces;
* Dewatering of construction sites;
* Improper washing of concrete ready-mix trucks;
* Commercial use of soaps and detergents: used in cleaning pavement, vehicles and equipment outside;
* Latex/oil-based paints and solvents disposed of in gutters or inlets;
* Restaurant grease: improper disposal;
* Private/Public utilities improperly storing chemicals or maintaining equipment;
* Leaking dumpsters;
* Car lots for used and new vehicles dripping fluids on the pavement;
* Fuel spills;
* Hazardous materials dumped along the roadway; and
* Unidentified substances dumped in secluded areas.

# Definition of Dry Weather Inspection

A dry weather period is a time interval during which less than 0.1 inch of rain is observed across a minimum of 72 hours. Unlike wet weather sampling, dry weather inspections are not intended to capture a “first flush” of stormwater discharge, rather they are intended to identify any/all discharges from a stormwater outfall during a period without recorded rainfall. The objective of inspections during a dry weather period is to characterize observed discharges and facilitate detection of illicit discharges.

# Visual Conditions Analysis

For any visual observation of pollution in a stormwater outfall discharge, an investigation into the pollution source should occur, but the following are often true:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.
3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: Indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator or disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent and some toilet paper): indicators of illicit discharge.
7. Orange staining: indicator of high mineral concentrations.

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional discharge of pollutants to catch basins; combined sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances).

## Conditional and Qualitative Considerations

Although many of the parameters listed above are considered to be indicators of illicit discharge, the presence of a parameter is not absolute evidence of an illicit discharge.

Some of these indicators may occur naturally. Orange staining may be the result of naturally occurring iron, and therefore unrelated to pollution. Foam can be formed when the physical characteristics of water are altered by the presence of organic materials. Foam is typically found in waters with high organic content such as bog lakes, streams that originate from bog lakes, productive lakes, wetlands, or woody areas. To determine the difference between natural foam and foam cause by pollution, consider the following:

1. Wind direction or turbulence: natural foam occurrences on the beach coincide with onshore winds. Often, foam can be found along a shoreline and/or on open waters during windy days. Natural occurrences in rivers can be found downstream of a turbulent site.
2. Proximity to a potential pollution source: some entities including the textile industry, paper production facilities, oil industries, and firefighting activities work with materials that cause foaming in water. If these materials are released to a water body in large quantities, they can cause foaming. Also, the presence of silt in water, such as from a construction site can cause foam.
3. Feeling: natural foam is typically persistent, light, not slimy to the touch.
4. Presence of decomposing plants or organic material in the water.

Some of the indicators can have multiple causes or sources. For example, both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear “blocky”. Bacterial or naturally occurring sheens are usually silver or relatively dull in color and will break up into a few small patches of sheen. The cause may indicate the presence of iron, decomposition of organic material or presence of certain bacteria. Bacterial sheen is not a pollutant but should be noted.

Optical enhancers at high concentrations are sometimes visible to the naked eye as a bluish-purple haze in the water. However, due to physiological variation of the human eye, not all inspectors may be able to identify the presence of these materials, and quantitative testing is the preferred method to confirm the presence of these compounds. Optical enhancers are typically detected using clean, white cotton pads placed within the discharge for several days, dried, and viewed under a fluorometer. If the cotton pad fluoresces, optical enhancers are assumed to be present. The magnitude of the fluorescence, as measured in fluorescent units, can be used to correlate the concentration of optical enhancers in water to other samples collected locally.

# FIELD INSPECTION FORMS

The Dry Weather Screening Inspection Form provides a record of routine screenings during dry weather events. Screenings shall be conducted by field staff on a routine basis.

**REFERENCE**

**ALLOWED DISCHARGES**

NON-STORMWATER DISCHARGES THAT ARE PERMISSIBLE:

|  |  |
| --- | --- |
| ⬩ water line flushing | ⬩ irrigation return flow |
| ⬩ landscape irrigation | ⬩ springs |
| ⬩ diverted stream flows | ⬩ water from crawl space pumps |
| ⬩ rising groundwaters | ⬩ footing drains |
| ⬩ uncontaminated groundwater infiltration | ⬩ lawn watering |
| ⬩ uncontaminated pumped groundwater | ⬩ individual residential car washing |
| ⬩ discharges from potable water sources | ⬩ flows from riparian habitats and wetlands |
| ⬩ foundation drains | ⬩ dechlorinated swimming pool discharges |
| ⬩ air conditioning condensation | ⬩ street wash water |
| ⬩ flows from riparian habitats and wetlands |  |

**PROHIBITED MS4 DISCHARGES**

The following are considered to be illicit (illegal) discharges to the George Washington Memorial Parkway MS4 (this list is not considered all inclusive):

Sanitary wastewater sources such as:

* Sanitary wastewater (usually untreated) from improper sewerage connections, exfiltration or leakage;
* Effluent from improperly operating or improperly designed septic tanks; and
* Overflows of sanitary sewerage systems.

Automobile maintenance and operation sources such as:

* Untreated (e.g., through a well-maintained oil/water separator) commercial car wash wastewaters;
* Untreated radiator flushing wastewaters;
* Untreated engine degreasing wastes;
* Improper oil, gasoline, and other automotive fluids disposal;
* Leaky underground storage tanks; and
* Untreated leaking of oils, gasoline and other automotive fluids for automobiles.

Landscape irrigation sources such as:

* Direct spraying of fertilizers, pesticides or herbicides onto impervious surfaces; and
* Over-application of fertilizers, pesticides or herbicides onto landscaping.

Other sources such as:

* Laundry wastes;
* Non-contact cooling waters;
* Metal plating baths;
* Dewatering of construction sites;
* Washing of concrete ready-mix trucks;
* Contaminated sump pump discharges;
* Improper disposal of household toxic wastes;
* Spills from roadway and other accidents;
* Chemicals, hazardous materials, garbage, and sanitary sludge landfills and disposal sites;
* Commercial use of soaps and detergents; use in cleaning pavement, vehicles and equipment;
* Sediment from lack of or improper maintenance of erosion and sedimentation controls;
* Latex/oil-based paints & solvents;
* Trash and debris: littering and dumping, household or construction waste; and
* Restaurant grease: Improper disposal.