

## **SOP ID-5: LOCATING ILLICIT DISCHARGES**

### *Introduction*

An “illicit discharge” is any discharge to an engineered storm drain system that is not composed entirely of stormwater unless the discharge is defined as an allowable non-stormwater discharge under the current New Hampshire MS4 Permit. Illicit discharges may enter the engineered storm drain system through direct or indirect connections, such as: cross-connections of sewer services to engineered storm drain systems; leaking or failing septic systems; intentional discharge of pollutants to catch basins; sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances). Illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to receiving waterbodies.

Illicit discharges can be located by several methods, including routine dry weather outfall inspections and catch basin inspections, which are described in detail in SOP ID-1, “*Dry Weather Outfall Inspection*”, SOP ID-3 *Catchment Investigations*, and SOP HW-1, “*Catch Basin Inspection and Cleaning*”, as well as from citizen reports.

This SOP has legal authority under the Milton [New Hampshire Storm water Manual Volumes 1-3, December 2008, NH Department of Environmental Services] to prohibit the connection of non-stormwater discharges into any town storm drain system. The authority or department for addressing illicit discharge reports is the Department of Public Works.

The town’s inspector has legal authority to enter the site. However, if denied permission to enter the site, the inspector should never force entry but instead should notify the Chief of Police.

### *Identifying Illicit Discharges*

The following are often indicators of an illicit discharge from stormwater outfall:

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 of disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicator of the cross-connection of a sewer service.
7. Orange staining: indicator of high mineral concentrations.

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 sheen is not a pollutant but should be noted.

### *Citizen Call in Reports*

Reports by residents and other users of waterbodies can be effective tools in identifying the presence of illicit discharges. **The Town has set up an email address on the MS4 webpage for this purpose and has provided guidance to local police departments and dispatch centers to manage data reported in this manner.** Town staff employees and the general public receive education to help identify the signs of illicit discharges and are informed how to report such incidents.

When a call is received about a suspected illicit discharge, the attached *IDDE Incident Tracking Sheet* shall be used to document appropriate information. Subsequent steps for taking action to trace, document, and eliminate the illicit discharge are described in the following sections.

Potential illicit discharges reported by citizens should be reviewed on an annual basis to locate patterns of illicit discharges, identify high-priority catchment areas, and evaluate the call-in inspection program.

### *Tracing Illicit Discharges*

Whenever an illicit discharge is suspected, regardless of how it was identified, the attached *IDDE Incident Tracking Sheet* must be utilized. The *Incident Tracking Sheet* shall be provided to the appropriate authority [Town Administrator], and the discharge shall be promptly investigated.

If the presence of an illicit discharge is confirmed, but its source is unidentified, additional procedures to determine the source of the illicit discharge should be completed.

1. Review and consider information collected when illicit discharge was initially identified, for example, the time of day and the weather conditions for the previous 72-hours. Also consider and review past reports or investigations of similar illicit discharges in the area.
2. Obtain storm drain mapping for the area of the reported illicit discharge.
3. Document current conditions at the location of the observed illicit discharge point, including odors, water appearance, estimated flow, presence of floatables, and other pertinent information. Photograph relevant evidence.
4. If there continues to be evidence of the illicit discharge, collect water quality data using the methods described in SOP ID-4, "*Water Quality Screening in the Field*". This may

include using field test kits or instrumentation or collecting analytical samples for full laboratory analysis.

5. Move upstream from the point of observation to identify the source of the discharge, using the system mapping to determine infrastructure, tributary pipes, and drainage areas that contribute. At each point, survey the general area and surrounding properties to identify potential sources of the illicit discharge. Document observations at each point on the *IDDE Incident Tracking Sheet* as well as with photographs.
6. Continue this process until the illicit discharge is no longer observed, which will define the boundaries of the likely source. For example, if the illicit discharge is present in catch basin X but not the next upstream catch basin Y, the source of the illicit discharge is between these two structures.

If the source of the illicit discharge could not be determined by visual survey, consider using dye testing, smoke testing, or closed-circuit television inspection (CCTV) to locate the illicit discharge. During dry weather or for intermittent flows, use sandbags and/or weirs to pool and collect flow for sampling, if applicable. At a minimum, sample suspected discharge for bacteria.

#### Dye Testing

Dye testing is used to confirm a suspected illicit connection to a storm drain system. Prior to testing, permission to access the site should be obtained. Dye is discharged into the suspected fixture, and nearby storm drain structures and sanitary sewer manholes observed for presence of the dye. Each fixture, such as sinks, toilets, and sump pumps, should be tested separately. A third-party contractor may be required to perform this testing activity.

#### Smoke Testing

Smoke testing is a useful method of locating the source of illicit discharges when there is no obvious potential source. Smoke testing is an appropriate tracing technique for short sections of pipe and for pipes with small diameters. Smoke added to the storm drain system will emerge in connected locations. A third-party contractor may be required to perform this testing activity.

#### Closed Circuit Television Inspection (CCTV)

Televised video inspection can be used to locate illicit connections. In CCTV, cameras are used to record the interior of the storm drainpipes. They can be manually pushed with a stiff cable or guided remotely on treads or wheels. A third-party contractor may be required to perform this testing activity.

If the source is located, follow steps for removing the illicit discharge. Document repairs, new connections, and other corrective actions required to accomplish this objective. If the source still cannot be located, add the pipe segment to a future inspection program.

A process flow chart is provided on the last page of this SOP.

*Removing Illicit Discharges*

Proper removal of an illicit discharge will ensure it does not recur. Refer to SOP ID-7 *IDDEP Enforcement* for detailed notification and enforcement procedures. In general, removal of confirmed illicit discharges will include:

- determination of who is financially responsible.
- suspension of access to the storm drain system if an “imminent and substantial danger” exists or if there is a threat of serious physical harm to humans or the environment.
- issuance of a Notice of Violation.
- repair/correct/remediation of the cause of the discharge by the property owner.
- a follow-up inspection to confirm that the illicit discharge has been removed.
- collection of a confirmatory bacteria sample (or other pollutant of concern) after the removal.

*Attachments*

1. SOP ID-5 *Illicit Discharge Incident Tracking Sheet*
2. Example *IDDEP Notice of Violation Letter*

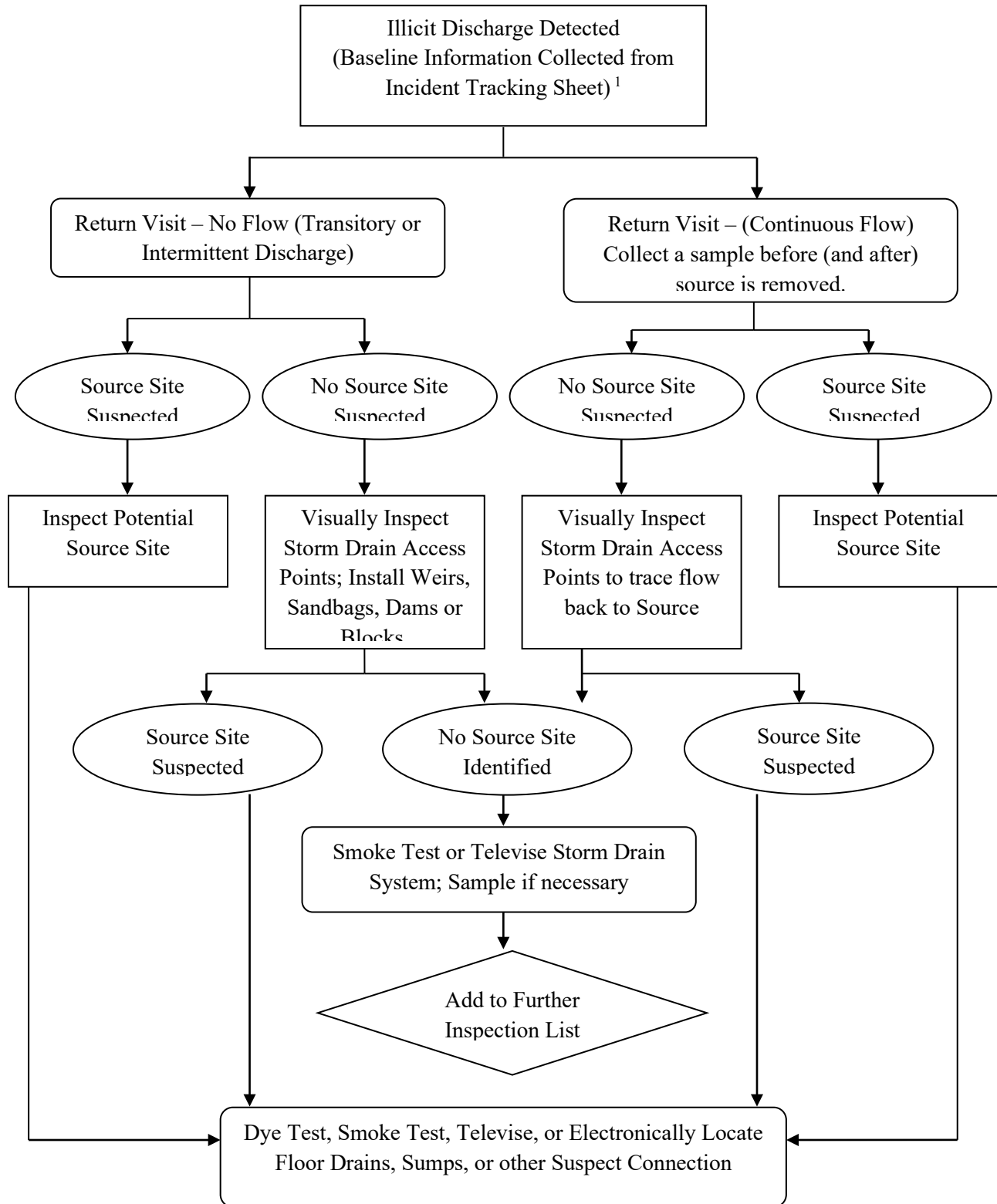
*Related Standard Operating Procedures*

1. SOP ID-0 *Stormwater Sampling Quality Assurance Project Plan*
2. SOP ID-3 *Catchment Investigations*
3. SOP ID-6 *Private Drainage Connection Inspection*
4. SOP ID-7 *IDDEP Enforcement*

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*Source: Central Massachusetts Regional Stormwater Coalition; Guidelines and Standard Operating Procedures, Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping, for Stormwater Phase II Communities in New Hampshire, New Hampshire Estuaries Project and NHDES, November 2006.*



¹ – Guidelines and Standard Operating Procedures: Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping for Stormwater Phase II Communities in New Hampshire, New Hampshire Estuary Project, 2006, p. 25, Figure 2-1.