

**Town of Colchester, Vermont**

**ILLICIT DISCHARGE DETECTION  
AND ELIMINATION PLAN**



**Prepared by the**

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*A Community of People, Business, Industry and  
Resources, working for a better Town.*

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## **1.0 INTRODUCTION**

- 1.1 Although the quality of the Nation’s waters has improved greatly since the passage of the Clean Water Act in 1972, many water bodies are still impaired by pollution. According to the U.S. Environmental Protection Agency’s (EPA’s) 2000 National Water Quality Inventory, 39 percent of assessed river and stream miles, 46 percent of assessed lake acres, and 51 percent of assessed estuarine square miles do not meet water quality standards. The top causes of impairment include siltation, nutrients, bacteria, metals (primarily mercury), and oxygen-depleting substances. Polluted storm water runoff, including runoff from urban/suburban areas and construction sites, is a leading source of this impairment. To address this problem, EPA has put into place a program that regulates certain storm water discharges.
- 1.2 In 1990, EPA promulgated Phase I of its storm water program under the National Pollutant Discharge Elimination System, (NPDES) permit provisions of the Clean Water Act. Phase I addressed storm water runoff from “medium” and “large” municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater, construction activity that would disturb five or more acres of land, and 10 categories of industrial activity. To further reduce the adverse effects of storm water runoff, EPA instituted its Storm Water Phase II Final Rule on December 8, 1999.
- 1.3 The Phase II storm water program is part of EPA’s NPDES program, which in many states is delegated to state authorities to administer. The State of Vermont is authorized to serve as a NPDES permitting authority. EPA Region 1 serves as the permitting authority for federal facilities in the State of Vermont.
- 1.4 Phase II regulates discharges from small MS4’s located in “urbanized areas”, as delineated by the Census Bureau in the most recent census, and from additional small MS4s designated by the permitting authority. Phase II also regulates construction activities that would disturb between one and five acres of land.
- 1.5 MS4s are typically operated by municipalities, but the Phase II definition of “municipal separate storm sewer systems” includes storm sewer systems owned or operated by other public bodies such as states, departments of transportation, etc. EPA also notes that an MS4 is not always just a system of underground pipes; it can include roads with drainage systems, gutters and ditches.
- 1.6 EPA’s Phase II rule specifies that permitting authorities must issue general permits for “automatically designated” small MS4s. The rule requires that operators of these automatically designated small MS4s apply for NPDES permit coverage. To obtain this coverage, an MS4 operator must develop, implement, and enforce a storm water management program that is designed to reduce the discharge of pollutants to the maximum extent practicable, protect water quality, and satisfy the applicable water quality requirements of the Clean Water Act.

EPA's Storm Water Phase II Final Rules states that this storm water management program must include the following six minimum control measures.

- Public education and outreach on storm water impacts.
- Public involvement and participation.
- **Illicit discharge detection and elimination (IDDE)**
- Construction site storm water runoff control
- Post-construction storm water management in new development and redevelopment
- Pollution prevention and good housekeeping for municipal operations.

1.7 As part of an application for permit coverage, MS4 operators must identify the best management practices they will use to comply with each of the six minimum control measures and the measurable goals they have set for each measure.

## **2.0 ILLICIT DISCHARGE DEFINED**

2.1 The term "illicit discharge" is defined in the EPA's Phase II storm water regulations as "any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges pursuant to a NPDES permit and discharges resulting from fire fighting activities"

2.2 Illicit discharges can be categorized as either direct or indirect.

2.2.1 Examples of Direct Discharges:

- a. Sanitary wastewater piping that is directly connected from a home to the storm drain catch basin.
- b. Materials (e.g., used motor oil) that have been dumped illegally into a storm drain catch basin.
- c. A shop floor drain that is connected to the storm sewer.
- d. A cross-connection between the municipal sewer and storm sewer systems.

2.2.2 Examples of Indirect Discharges:

- a. An old and damaged sanitary sewer line that is leaking fluids into a cracked storm sewer line.
- b. A failing septic system that is leaking into a cracked storm sewer line or causing surface discharge into the storm sewer.

### **3.0 ADDITIONAL EXEMPTIONS**

3.1 The EPA's Phase II storm water regulations require that an illicit discharge detection and elimination program need only address the following categories of non-storm water discharges if the operator of a small MS4 identifies them as significant contributors of pollutants to the MS4.

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Flows from riparian habitats and wetlands
- De-chlorinated swimming pool discharges
- Street wash water

### **4.0 ILLICIT DISCHARGE ORDINANCE**

4.1 The IDDE Plan is authorized by an Illicit Discharge and Storm Water Connection Ordinance, approved and adopted by the Colchester Select Board on \_\_\_\_\_. The Ordinance has been created to comply with the EPA's Phase II Storm Water Regulations. The ordinance contains a prohibition of illicit discharges, establishes the legal authority for the Town of Colchester to inspect properties suspected of releasing contaminated discharges into the storm sewer system, and, contains an enforcement mechanism to ensure compliance to the ordinance.

### **5.0 DEVELOPMENT OF STORM SEWER MAP**

5.1 This IDDE Plan utilizes GIS based Storm Sewer Maps to better understand the intake and discharge areas of the system. The maps aid in the determination of the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular water bodies these flows may be affecting.

- 5.2 The mapping includes such features as manholes, catch basins, piping, culverts, outfalls and storm water ponds. An inventory has also been completed that includes the identification of the type of structure, its location and the assignment of an identification number. As a management tool, the map allows for the correlation and evaluation of the physical features related to the Town's infrastructure, the various land uses throughout the community, and the associated water sheds for purposes of detecting and eliminating illicit discharges.
- 5.3 The Town is steadily increasing and improving its GIS mapping capabilities in order to maintain and update data layers such as the storm water map. Additionally, under the Town's land use regulations, developers are now required to provide site plan information in digital format which will be used to regularly update the Town's maps with new information.

## **6.0 LOCATING PRIORITY AREAS**

- 6.1 The process of locating priority areas shall consist of three steps. These include:
- a. The identification of potential hot spots.
  - b. Conducting dry-weather field screening to identify non-storm water discharges.
  - c. Conducting water quality tests to determine if any identified non-storm water discharges may be illicit discharges.
- 6.2 The identification of potential hot spots - "Hot Spots" are areas that are considered to be likely sources of illicit discharges, based on available information. These include certain types of zoning districts, older areas of the community, areas where there have been repeated complaints, and locations where water quality sampling have identified high levels of contaminants. The IDDE plan will rely upon several resources to identify these areas.
- 6.2.1 The mapping within the plan identifies current land uses through GIS zoning overlays. The IDDE plan shall focus primarily on social, institutional, infrastructure, industrial, manufacturing, waste, shopping, business and trade related land use activities.
- 6.2.2 Complaints or concerns from the public regarding possible illicit discharges or other water quality issues will be received through the establishment of a Storm Water Hotline. The line will be checked daily during normal business hours, and all messages will be reported to the Department of Public Works Operations Manager, and entered into a computer data base. Additional input may be received from Storm Water Watch Groups that have been established through the Public Involvement and Participation measure of the Town's Phase II Plan.

6.2.3 Information will also be collected from available water quality data. Extensive data has been collected by both the Town and State for waters in Colchester. This information will be used to identify priority areas for conducting dry-weather outfall and manhole surveys. The reference resources for this section are located in the plans appendix.

6.3 Conducting dry-weather outfall and manhole surveys – Visual observations of outfalls within priority areas will be made during dry weather. For purposes of this plan, dry weather shall be defined as no rain within the preceding 48 hours. Dry weather observations shall be completed for all outfalls within the prioritized areas two times each year. Dry-weather flows shall be observed for color, odor, turbidity, and floatable matter. Outfalls will also be observed for deposits and stains, vegetation, and damage to the outfall structure. This information shall be used to begin the preliminary process of determining the presence of a possible illicit discharge. The process may then be expanded to include water quality testing if a dry-weather flow is detected. All information collected through this phase of the plan will be recorded on field inspection logs and maintained within a central file or data base.

6.4 Conducting Water Quality Tests – When dry-weather flow is observed, visual or odor observations may provide sufficient information to determine that a discharge is illicit and identify the likely source. If not, water quality sampling shall be used to determine whether the flow is likely to have resulted from an illicit discharge. Certain water quality parameters can serve as indicators of the likely presence or absence of a specific type of discharge. This IDDE plan shall primarily use the following water quality test parameters to determine if dry-weather flows are illicit discharges.

- a. **pH** - Extreme pH values (low or high) may indicate commercial or industrial flows.
- b. **Optical Brighteners** – Used to indicate presence of laundry detergents.
- c. **Bacteria** – Used to indicate the presence of sanitary wastewater.

## 7.0 TRACING THE SOURCE OF AN ILLICIT DISCHARGE

7.1 Once storm drain outlets with evidence of illicit discharges have been identified, various methods can be used to pinpoint the exact source of the discharge. These include manhole observations, video inspection, smoke testing, dye testing, aerial infrared and thermal photography, and tracking illegal dumping. This IDDE plan will generally proceed with the following procedures, yet may elect to use other techniques if necessary.

- 7.1.1 Manhole Observations – This initial step involves following dry-weather flows upstream along the conveyance system to bracket the location of the source. Using the storm water system map as a guide, the next upstream manhole will be located and inspected to determine if a discharge is present. This process will be repeated until a junction is found with no evidence of a discharge. Further efforts are then concentrated between the junction with no discharge, and the next downstream manhole.
- 7.1.2 Smoke Testing - This step involves injecting non-toxic smoke into the storm sewer lines and then noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the storm sewer lines. Prior to performing this test, building owners and occupants within the area will be provided with advance notice. Public safety officials will also be notified of the test.
- 7.1.3 Dye Testing – Once the presence of an illegal connection has been identified through the smoke testing, dye testing shall be used to confirm the illegal connection. This technique involves flushing non-toxic dye into toilets and sinks and observing storm sewer and sanitary sewer manholes and storm sewer outfalls for the presence of the dye. Prior to performing these tests, building owners and occupants will be given advance notice and permission for entry shall be gained.

## **8.0 REMOVING THE SOURCE OF AN ILLICIT DISCHARGE**

- 8.1 There may be several different sources of illicit discharges. Subsequently, there will likely be various responses or actions the Town may take to address the illicit discharge. These actions will generally consist of the following:
  - 8.1.1 Compliance Assistance and Enforcement for Illegal Connections to Homes and Businesses. – Through this IDDE plan, the Town will respond to the discovery of an illegal connection in a graduated manner. Often, home or business owners are not aware of the existence of illegal connections between their buildings and the storm sewer system. The initial step will involve providing the responsible party with information about the connection, its environmental consequences, the applicable regulations, and how the problem may be corrected in an effort to secure voluntary compliance. In the event that voluntary compliance can not be secured, the Town will move to enforcement provisions as outlined within the IDDE Ordinance.

- 8.1.2 Proper Construction and Maintenance of MS4's – Some illicit discharge problems may be the responsibility of the Town. These problems may include cross connections within the municipal sanitary sewer and storm sewer systems, or infiltration into damaged or deteriorating storm sewer pipes. In these instances, the Town will immediately make the necessary corrections to the system.

Additionally, the Town shall maintain accurate maps of the sanitary sewer system and the storm sewer system to prevent the creation of cross connections during new construction. The Town will also periodically inspect and properly maintain these systems to keep them in good repair.

- 8.1.3 Preventing and Responding to Illegal Dumping – It is often difficult to identify and locate the individuals responsible for illegal dumping. Subsequently, this IDDE plan focuses on prevention, backed up by enforcement to the extent possible. The following strategies shall be used:

8.1.3.1 Site Maintenance and Controls – Storm-drain stenciling programs have been implemented as part of the Public Involvement and Participation measure of the Town's Phase II plan. This program will be continued on an annual or as needed basis in the future. The Town, through its public safety departments, maintains an operational readiness through regular training associated with hazardous material incidents.

8.1.3.2 Community Outreach and Involvement – A storm water hotline has been established to receive public concerns or complaints relating to illegal dumping or other water quality issues. An information brochure on illicit discharges has been developed and distributed to local businesses through the Town's Economic Development Office. The Town also provides other outreach materials to the general public relating to waste disposal options, such as oil recycling and household hazardous waste collections through a website developed through the Chittenden County Regional Education Program, (RSEP).

8.1.3.3 Targeted Enforcement – An IDDE ordinance has been developed and adopted by the Select Board. Training of municipal employees is conducted annually on identifying and detecting illicit discharges.

## **9.0 EVALUATION OF THE IDDE PROGRAM**

9.1 The annual evaluation of the IDDE plan will include documentation of actions taken to locate and eliminate illicit discharges. Documentation shall include such information as the number of outfalls screened, complaints received and investigated, feet of storm sewers investigated for illicit discharges, numbers of tests conducted and number of illicit discharges detected and eliminated. Additionally, information shall be collected from existing ongoing water quality monitoring programs and correlated with information collected through the IDDE plan. This information will then be used to assess the overall effectiveness of various IDDE strategies. Specific evaluations will include:

- a. The number of possible illicit discharges that were detected using different detection methods, to determine which detection methods are most effective.
- b. The number of illicit discharges eliminated using different possible enforcement and compliance measures.
- c. Any changes in water quality data at ongoing sampling sites within areas where illicit discharges have been detected and eliminated.
- d. The efficiency and feasibility of various procedures or the practical difficulties encountered with a particular approach.

## **10. OUTREACH TO EMPLOYEES, BUSINESSES, AND THE GENERAL PUBLIC**

10.1 This section of the IDDE Plan describes the Town's current and ongoing efforts toward informing public employees, businesses, and the general public of the hazards associated with illegal discharges and improper disposal of waste.

10.1.1 Public Employees – On an annual basis, the Town's maintenance employees receive training relating to Pollution Prevention/Good Housekeeping for Municipal Operations as a part of the Town's Phase II plan. The training provides a basic understanding of how municipal operations can result in the discharge of contaminants, basic knowledge of illicit discharges, including detection and elimination, and what steps can be taken to prevent these discharges from municipal operations.

10.1.2 Businesses – The Department of Public Works has developed an informational brochure designed for local businesses to improve their understanding of illicit discharges. Several hundred of the brochures were produced and distributed to local businesses through the Colchester Community Development Office. The Town will continue to provide this information to the Community Development Office for distribution to local businesses.

10.1.3 General Public – The Colchester Public Works Department has partnered with several local residents on a storm-drain stenciling program. Area residents, together with neighborhood children, worked together with the Town to stencil approximately 800 storm-drains throughout the community. The materials and training were provided by the Town. Local papers covered the story printing pictures of the kids performing the work and learning about good water resource management.

10.1.3.1 The Town of Colchester is a member of the Regional Storm Water Education Program, (RSEP). This regional consortium of Chittenden County MS4's has hired a professional Marketing Firm to create a marketing campaign to educate the public on a variety of storm water issues.

RSEP annually creates several radio, television and print advertisements, and manages a “drive to web” campaign. The RSEP website contains a variety of waste management and reduction information for the public.

10.1.3.2 The Town of Colchester, Department of Public Works, maintains its own web site which hosts a variety of storm water information and associated links for the general public to learn more about water quality issues and illicit discharges.

10.1.3.3 The Colchester Department of Public Works partnered with local residents on stream corridor cleanup projects in conjunction with Greenup Day. An engineering consultant was retained to perform a field reconnaissance of an impaired water shed within the community, and to identify any illegal waste sites. Sites were located with GIS coordinates and mapped. The department worked with the local residents to educate them on the hazards associated with illegal dumping, and cleaning up the stream corridor.

10.1.3.4 The Department has also established a storm water hotline that can be contacted by the public to report illicit discharges or any other concerns regarding water quality in Colchester. The telephone number is advertised on the Town's website. The line is checked daily during normal business hours, and complaints are forwarded to the Public Works Operations Manager for follow up. All calls, complaints and actions are recorded within a computer data base for future reference.

10.1.3.5 The Department has established several Storm Water Watch Groups in various watersheds throughout the community. These citizens serve as additional eyes and ears for the Town, looking for signs of illicit discharges and other water quality issues. Initially, basic educational materials are provided to assist them in their duties, with periodic updates as required.

## **11.0 BMPS AND MEASUREABLE GOALS**

11.1 BMP's and measurable goals associated with the Town's efforts toward Illicit Discharge Detection and Elimination, are outlined in Section 4.2.3 of the Town's Phase II plan, authorized by the VANR under General Permit 3-9014, NPDES Number VTR040000. The creation and implementation of this IDDE plan is itself, a feature goal identified in the Town's Phase II plan.