**ILLICIT DISCHARGE,**

**DETECTION AND**

**ELIMINATION**

**(IDDE) MANUAL**

**THE CITY OF CENTENNIAL**

**ENGINEERING DIVISION**

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# ACRONYMS

**Technical Terms:**

|  |  |
| --- | --- |
| BMP | **Best Management Practice** |
| GIS | **Geographic Information System** |
| GPS | **Global Positioning System** |
| IDDE | **Illicit Discharge Detection and Elimination** |
| MS4 | **Municipal Separate Storm Sewer System** |
| NPDES | **National Pollutant Discharge Elimination System** |
| NOV | **Notice of Violation** |
| SIC | **Standard Industrial Classification** |
| SOP | **Standard Operating Procedure** |

**Agencies:**

|  |  |
| --- | --- |
| EPA | **U.S. Environmental Protection Agency** |
| CDPHE | **Colorado Department of Public Health and Environment** |
| CDPS | **Colorado Discharge Permit System** |
| WQCD | **Water Quality Control Division of the CDPHE** |
| CWA | **Clean Water Act** |

# **CHAPTER 1 – INTRODUCTION**

As authorized by the CWA, the National Pollutant Discharge Elimination System (NPDES) Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. To reduce the adverse effects of stormwater runoff, the U.S. Environmental Protection Agency (EPA) instituted its Stormwater Phase II Final Rule on December 8, 1999. This Phase II Stormwater Program is part of the EPA’s NPDES program, which in Colorado is delegated to the Water Quality Control Division (WQCD) of the Colorado Department of Public Health and Environment (CDPHE) to administer. The WQCD designated The City of Centennial, as well as the other cities, towns, and special districts within Arapahoe County, as Phase II entities, charged with formally managing runoff from storm events. Commonly referred to as ‘stormwater quality management’, this effort will reduce the sediment and chemical load on the state’s waters. The City of Centennial was issued an NPDES Phase II Municipal Separate Storm Sewer (MS4) Discharge Permit on March 1, 2003.

**THE ROLE OF ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) IN PHASE II STORMWATER**

Towards the end of reducing the sediment and chemical load on the State’s waters, the City of Centennial is in the process of implementing and enforcing a Stormwater Management Program to satisfy the applicable water quality requirements of the CWA. The EPA’s Stormwater Phase II Final Rule states that this stormwater management program must include the following six minimum control measures:

* Program #1: Public education and outreach on stormwater impacts,
* Program #2: Public involvement and participation,
* **Program #3: Illicit discharge detection and elimination (IDDE),**
  + - * Program #4: Construction site stormwater runoff control,
      * Program #5: Post-construction stormwater management in new development and redevelopment, and
      * Program #6: Pollution prevention and good housekeeping for municipal operations.

The City of Centennial has identified the best management practices we will use to comply with each of these six minimum control measures and the measurable goals we have set for each measure. For Program #3, Illicit Discharge, Detection, and Elimination, this Manual has been prepared to meet the requirements of the Phase II Stormwater Program for IDDE as follows:

* Chapter 2 explains the IDDE requirements of the WQCD’s Phase II regulations.
* Chapter 3 reviews the procedure for mapping the MS4 within the City.
* Chapter 4 identifies the priority areas within the City and discusses the inspection schedule of the MS4.
* Chapter 5 references the enforcement mechanisms for illicit discharges and lists prohibited discharges.
* Chapter 6 specifically addresses the Standard Operating Procedures (SOPs) for field staff in the areas of Scheduled Inspections of the MS4, Ancillary Inspections of the MS4 and City Staff Observations of MS4 Illicit Discharge events.
* Chapter 7 addresses the physical tracing of illicit discharges in the MS4 system as well as SOPs for data collection of these events.
* Chapter 8 provides the procedure for enforcement of a reported illicit discharge event.
* Chapter 9 outlines the various procedure options for removing the sources of an illicit discharge.
* Chapter 10 reviews the annual reporting, evaluation, and updating process for this IDDE Manual.
* Chapter 11 provides a list of resources that can be accessed for more information regarding stormwater and illicit discharge issues.

# **CHAPTER 2 – THE CITY OF CENTENNIAL IDDE PROGRAM**

**DEFINITION OF AN ILLICIT DISCHARGE**

The term “illicit discharge” is defined in the WQCD’s Phase II Stormwater regulations as “any discharge to a municipal separate storm sewer that is not composed entirely of stormwater, except discharges pursuant to the Colorado Discharge Permit System (CDPS) permit and discharges resulting from fire-fighting activities.”

**WHY ARE IDDE EFFORTS NECESSARY?**

Discharges from MS4s often include wastes and wastewater from non-stormwater sources. Illicit discharges enter the MS4 through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by storm drainage in street, inlets, and drain outlets, or paint or used oil dumped directly into a drain or into street inlets). The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to waters of the state. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

**THE ELEMENTS OF AN IDDE PROGRAM**

The WQCD’s Phase II regulations state that an IDDE program must incorporate the following four elements:

* Develop an MS4 map showing the location of all outfalls, and the names and locations of all waters of the state that receive discharges from those outfalls;
* Develop and implement a plan to detect and address illicit discharges, including illegal dumping, to the system;
* To the extent allowable under state, tribal, or local law, effectively prohibit through ordinance, or other regulatory mechanism, illicit discharges into the MS4 and implement appropriate enforcement procedures and actions as needed; and
* Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

The City of Centennial has incorporated all of these elements within this Manual, or through implementation of our Phase II Permit requirements. Application of the above elements will be addressed throughout the IDDE Manual.

**NON-STORMWATER DISCHARGES\* THAT THE CITY OF CENTENNIAL’S IDDE PROGRAM NEED NOT ADDRESS**

The iCity of Centennial IDDE Program lists the following categories of non-stormwater discharges **to be exempt** from the City’s MS4 permit requirements:

|  |  |
| --- | --- |
| * Water line flushing | * Irrigation return flow |
| * Landscape irrigation | * Springs |
| * Diverted stream flows | * Water from sump pumps |
| * Rising groundwaters | * Footing drains |
| * Uncontaminated groundwater infiltration | * Dechlorinated swimming pool discharges |
| * Street sweeper wash water | * Individual residential car washing |
| * Foundation drains | * Lawn watering |
| * Flows from riparian habitats and wetlands | * Uncontaminated pumped groundwater |
| * Air conditioning condensation |  |

\*NOTE: even if one of these discharges is exempt from the i City of Centennial Phase II Stormwater Quality Permit requirements, it may still require a state-issued permit, such as a Minimal Industrial Discharge (MINDI) Permit, so check with the WQCD, Permits Division, prior to discharge activities.

**REFERENCES: CHAPTER 2**

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Stormwater Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. *http://www.epa.gov/npdes/regulations/phase2.pdf*

USEPA. 2000. EPA Stormwater Phase II Final Rule Fact Sheet 2.5: *Illicit Discharge Detection and Elimination Minimum Control Measure*, EPA 833-F-00-007. January 2000. [*http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm*](http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm)

# **CHAPTER 3 – DEVELOPING AN MS4 MAP**

**INTRODUCTION OF THE “SWIM” COLLECTION PROCESS**

In 2002, City of Centennial staff, along with the Arapahoe County GIS staff, began the development of a mapping process that would address the immediate issues of stormwater system mapping, as well as future illicit discharge tracking throughout the unincorporated portions of the County. Along with these processes, future needs for maintenance tracking and abandonment and replacement of stormwater features was developed. Using Trimble GPS units with ArcPad software, information can be collected in the field that then is downloaded into mapping process. It is the City’s hope, in the future, to be able to integrate MS4 information from other entities into the City’s mapping process.

**MAPPING OPTIONS**

Data for MS4 mapping can be collected from a variety of sources for input into the data collection process. As-built drawings will be used in areas where this information is available. Field data will be collected in older and rural areas where as-built drawings are not available. Ultimately, the final collection of data will occur through the importing of data from other Arapahoe County Phase II Permittees and the electronic submittal of as-built drawings.

As-Built Data Collection

As-built drawings provide location as well as feature information in a concise manner. As often as possible, stormwater system data will be collected from as-built drawings for input into the mapping. This information will be added on the appropriate feature layer and attributes of the stormwater feature will be added to the data collection table. The draft MS4 map can then be downloaded into the Trimble units, and with the ArcPad software, coordinates can be collected and recorded, as well as confirmation of the feature in the field.

Due to the user-friendliness of collecting data from as-built drawings, features will be added to the mapping system in this manner whenever possible.

Field Data Collection

Global Positioning System (GPS) technology will be used to obtain the coordinates (longitude and latitude) for each outfall. Currently, the City of Centennial is using Trimble GeoXT GPS units with ArcPad 6.02. With this configuration, raw field data is collected and imported; pre-established as-built data are downloaded, field confirmation and collection of GPS coordinates and uploading of modified data is completed; and data on illicit discharge events that occur outside of the MS4 system is collected.

**PRIORITIZING AREAS TO BE MAPPED**

Practical considerations will dictate the need to conduct mapping in phases. Therefore, the City of Centennial will prioritize our mapping agenda. Older developed areas are more likely to have illicit discharges than newer areas for various reasons (e.g., the City has imposed inspection requirements on new construction that help to prevent illegal connections). The City of Centennial will attempt to map the older areas first to ensure that priority areas are mapped.

Other considerations in setting mapping priorities include land uses, reports of illicit discharges, and other information specific to each MS4. Although the WQCD’s Phase II regulations require that only outfalls be mapped, once an illicit discharge is detected at an outfall, it may be necessary to map the portion of the MS4 leading to the outfall so that the source of the discharge can be located. Therefore, mapping the entire MS4 will prove very helpful to the City’s IDDE program.

**CAN A DITCH BE AN OUTFALL?**

*The paragraph below is an excerpt from EPA’s Stormwater Phase II Final Rule (USEPA, 1999):*

The term “outfall” is defined in 40 CFR 122.26(b)(9) as “a point source at the point where a municipal separate storm sewer discharges to waters of the United States.” The term “municipal separate storm sewer” is defined at 40 CFR 122.26(b)(8) as “a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains).” Following the logic of these definitions, a “ditch” may be part of the municipal separate storm sewer, and at the point where the ditch discharges to waters of the United States (State), it is an outfall. As with any determination about jurisdictional provisions of the CWA, however, final decisions require case-specific evaluations of fact.

**REFERENCES: CHAPTER 3**

Colorado Department of Public Health and Environment, Water Quality Control Division. 2001. *Colorado’s Phase II Municipal Guidance: A guide to application requirements and program development for coverage under Colorado’s Phase II municipal stormwater discharge permit.* <http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html>

Massachusetts Division of Fisheries, Wildlife, and Environmental Law Enforcement. 2002. *Storm Drain Mapping Project Field Manual* (Draft). <http://www.state.ma.us/dfwele/River/pdf/rivstormdrainmanual.pdf>

Oakland County, Michigan. 2002. *Illicit Discharge Elimination Program.* <http://www.co.oakland.mi.us/drain/program_service/illicit_disch.html>

Pitt, R., M. Lalor, R. Field, D.D. Adrian, and D. Barbe. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User’s Guide.* USEPA Office of Research and Development. EPA/600/R-29/238. <http://www.epa.gov/clariton>

Rohrer, C.A., and Beckley, R.J. Undated. *Using GIS Tools to Implement an Illicit Discharge Elimination Program in Livonia, Michigan.* Rouge River Demonstration Project. <http://www.rougeriver.com/proddata>

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Stormwater Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. <http://www.epa.gov/npdes/regulations/phase2.pdf>

# **CHAPTER 4 – LOCATING PRIORITYAREAS**

**IDENTIFYING AREAS OF INTEREST**

The City of Centennial encompasses an urbanized area with over 90% of the City primarily residential areas, and the remaining 10% primarily commercial areas located generally within special districts that are separately permitted. West of I-25, the City of Centennial is approximately 95% residential, single family housing and 5% commercial in the form of strip malls along the major arterials of Arapahoe Road and University Avenue. East of I-25 and west of Parker Road, the City is primarily commercial, with the majority of the businesses clustered along the major arterials of Arapahoe Road, Peoria Street, and Jordan Road, including the Centennial Airport Center south of Arapahoe Road between Peoria Street and Potomac Street. East of Parker Road, the City of Centennial is again primarily residential, with over 95% of the area residential housing and less than 5% small businesses along the major arterials of Orchard Road and Parker Road. The commercial areas along Arapahoe Road east of I-25 are in the Arapahoe County Water and Waste Authority district. The commercial areas east of Parker Road are managed through the East Cherry Creek Valley Water and Sanitation District. There are relatively no industrial areas, and very little industrial uses in the City of Centennial. In addition, the majority of development in the City of Centennial is in subdivisions, with relatively few single, private property lots being developed. These subdivisions are required to utilize the local water and sanitation district facilities, rather than individual sanitary septic systems.

Locating priority areas will rely on accurate stormwater maps, and knowledge of the land use, relative age of the stormwater systems, the record of any previous public or staff notification of potential problem areas, and existing monitoring data that have identified areas of interest. Even though there is a lack of identified industrial land uses within the incorporated portions of urban Centennial, and the majority of commercial land uses are within special districts with separate permits, we will still look at commercial as an area of interest. Also, the older neighborhoods will be looked at as priority areas. In addition, the Cherry Creek watershed area will be looked at as a priority in terms of influencing fertilizer use. Additionally, all complaints received by the City will be reviewed in order to identify areas where problems have been identified previously. Finally, water quality monitoring data may be used to identify an area of interest for further evaluation. Over the course of the permit term, priority areas will be part of active and on-going visual observation activities as part of a preventative program.

The following guidelines will be considered while identifying areas of interest for the City:

* **Commercial/industrial areas.** These areas have been found in some communities’ IDDE programs to (a) have significant numbers of illicit connections and/or (b) have discharges with a high potential to affect water quality (Tuomari, 1999 and Pitt et al., 1993). Specific business sectors can be prioritized (e.g., businesses subject to waste water pretreatment rules, businesses falling under certain Standard Industrial Classification [SIC] codes, or business sectors with a record of enforcement actions).
* **Older areas of the City.** Older development may predate more stringent construction codes regarding illegal connections and may have deteriorating sanitary sewer and/or storm sewer infrastructure that can lead to infiltration problems.
* **Areas where there have been repeated complaints.** Areas where illegal dumping or apparently contaminated discharges have been reported are obvious priority targets. The City’s Maintenance Referral Form Process (MRF) process will assist with collecting data to support prioritizing areas where repeated complaints occur.
* **Locations identified from ambient water quality sampling data.** The locations of high levels of particular contaminants (e.g., bacteria) can help to target priority outfalls. Local watershed groups monitor many water bodies, particularly those in more developed areas (e.g., the Cherry Creek Basin Water Quality Authority). In addition to providing sampling data, these groups can often serve as valuable resources for information about a particular water body and potential problem areas. Other possible sources of water quality data include the State’s web site and the Tri-County Health Department.

**PRIORITY AREAS IDENTIFIED BY THE CITY OF CENTENNIAL**

Using the guidelines provided above, City of Centennial staff identified the following priority areas within the City’s Phase II Permit boundaries:

* Arapahoe Road East of I-25 and West of Parker
* Cherry Creek Business Park along Jordan Road
* Arapahoe Road west of I-25
* University Boulevard south of Orchard Road

**REFERENCES: CHAPTER 4**

Clark County (WA) Public Works. 2000. *Illicit Discharge Screening Project: Annual Summary 2000.* <http://www.co.clark.wa.us/site/clean/download/2000rept.pdf>

Colorado Department of Public Health and Environment, Water Quality Control Division. October 2001. *Colorado’s Phase II Municipal Guidance: A guide to application requirements and program development for coverage under Colorado’s Phase II municipal stormwater discharge permit.* <http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html>

Donlon, A. 2001. *2000 Costal Illicit Connection Remediation Grant Program: Final Report.* New Hampshire Department of Environmental Services and New Hampshire Estuaries Project. R-WD-01-10. <http://www.des.state.nh.us/wmb/was/nhep2000.pdf>

Jewell, C. 2001. A Systematic Methodology for Identification and Remediation of Illegal Connections. Presented at the Water Environment Federation Specialty Conference *2001 A Collection Systems Odyssey: Combining Wet Weather and O& M Solutions.* <http://www.wef.org>

North Central Texas Council of Governments. 2002. *Stormwater Management in North Central Texas: Illicit Discharge Detection and Elimination.* <http://www.dfwstormwater.com/Storm-Water-Bmps/illicit.html>

San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. 2001. *Illicit Connection/Illicit Discharge (IC/ID) Detection and Elimination Model Program Guidance.* <http://www.projectcleanwater.org/html/model-programs.html>

Sargent, D. and W. Castonguay. 1998. *An Optical Brightener Handbook.* <http://www.mvpc.org/services_sec/mass_bays/optical_handbook.htm>

Tuomari, D. 1000*. Dos and Don’ts on Implementing a Successful Illicit Connection Program*. Rouge River Demonstration Project. <http://www.rougeriver.com/proddata>

# **CHAPTER 5 – PROHIBITING ILLICIT DISCHARGES**

**ILLICIT DISCHARGE ORDINANCE**

As the WQCD’S guidance specifies, a municipal ordinance or other regulatory mechanism created to comply with Phase II regulations must include a *prohibition* of illicit discharges and an enforcement mechanism. Note that it is also essential for the City to establish legal authority to inspect properties suspected of releasing contaminated discharges into the MS4. Consultation with the City Attorney’s Office, in conjunction with a review of existing bylaws and regulations, determined the procedure for prohibiting illicit discharges and the applicable enforcement mechanism in the City of Centennial is an Ordinance. The City of Centennial has taken into account the legal authority granted to it under state law, the Phase II Permit requirements in Colorado, the enforcement methods the City deems appropriate, and any other locality-specific considerations. Consequently, the City of Centennial is able to prohibit illicit discharges to our MS4, as well as enforce the elimination and mitigation of any illicit discharges that do occur, through their IDDE Ordinance 2004-0-27:

Also, the Arapahoe County Sheriff’s Office is available for consultation on the use of this statute to enforce the County’s IDDE measure, and, as the enforcing party, will be notified of any infractions so they can investigate and bring enforcement actions to the situation.

**PROHIBITED MS4 DISCHARGES**

The following are considered to be illicit (illegal) discharges to the City of Centennial 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.

**REFERENCES: CHAPTER 5**

BWSC. 2002. *Regulations Governing the Use of Sanitary and Combined Sewers and Storm Drains.* <http://www.bwsc.org>

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Stormwater Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851.

USEPA. 2002. *Model Ordinances to Protect Local Resources; Illicit Discharges.* <http://www.epa.gov/owow/nps/ordinance/discharges.htm>

# **CHAPTER 6 – VISUAL INSPECTION OF THE MS4 – STANDARD OPERATING PROCEDURES (SOPs)**

INTRODUCTION

The City of Centennial Outfall Visual Observation and Inspection SOPs have been developed to comply with the WQCD’s CDPS Stormwater Management Program Permit No. COR-080010. The Permit requires that a program be developed to address the discharge of illicit (non-stormwater) pollutants into the MS4.

The quality of stormwater entering the waters of the state within the City relies heavily on a variety of City staff visually monitoring the MS4. There are three types of City staff trained in the detection of pollutants to assist in preventing and helping eliminate sources of impurities to the waterways. The groups are: specific Stormwater staff that have the duty of conducting inspections of the outfalls as part of a scheduled inspection as well as responding to an IDDE incident; ancillary staff within the Public Works Department who are in the drainageways for other purposes (mosquito and animal control personnel, surveyors, and the like); and all City staff who drive a City vehicle and have the opportunity for a visual, albeit drive-by, inspection of the drainageways. To establish a program for routine inspection, as well as random reporting of illicit discharges by field staff, the following SOPs have been developed:

* SOP/IDDE 6-1 – Scheduled Visual Observation Inspections of the MS4.
* SOP/IDDE 6-2 – Ancillary Visual Observation Inspections of the MS4.
* SOP/IDDE 6-3 – Random Observation Program for MS4 Illicit Discharges.

**TRAINING OF SOPs**

The above SOPs will be included in training sessions for appropriate field staff. In addition, new staff will be trained periodically by the Program #3 Manager, Stormwater Engineering Department. Annual refresher/update trainings will also be scheduled with field staff to address any changes to and/or concerns with these SOPs.

Following are the SOPs for the Visual Observation Program for MS4 Illicit Discharges and Scheduled Inspection:

**The City of Centennial SOP/IDDE 6-1**

**Scheduled Visual Observation Inspections of the MS4**

THE CITY OF CENTENNIAL SOP/IDDE 6-1

SCHEDULED VISUAL OBSERVATION INSPECTIONS OF THE MS4

**INTRODUCTION**

*The City of Centennial Scheduled Visual Observation Inspections of the MS4* SOP has been developed to comply with the WQCD’s CDPS Stormwater Management Program Permit No. COR-080010. The Permit requires that a program be developed to address the discharge of illicit (non-stormwater) pollutants into the City’s MS4.

The quality of stormwater entering the waters of the state within the City relies heavily on assigned City personnel monitoring the storm drainage systems. City personnel trained in the detection of pollutants can prevent and help eliminate sources of impurities to the waterways. To establish a program for detecting pollutants in storm drain manholes, inlets, and outfalls, a standard procedure has been developed.

**Outfall Visual Inspection Rationale**

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 the i City of Centennial MS4, 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.

**OUTFALL LOCATIONS**

According to Section 61.2(49) of the CDPS Regulations, a municipal stormwater outfall means a point source “at the point where a municipal separate storm sewer discharges to state waters and does not include open conveyances which connect segments of the same stream or other state waters and are used to convey state waters”. Also, per the Colorado Phase II Municipal Guidance, it can be assumed that a municipal stormwater outfall is the same as storm sewer outfall.

The City of Centennial has or will map the MS4 outfalls located within the unincorporated portions of the City. This location information is kept in the City’s Mapping/GIS System, along with other information pertaining to the outfall. As new outfalls are constructed as part of development or capital projects, electronic as-built information, including geo-spatial data, will be used to update the GIS/Mapping database.

For the purposes of this SOP, the terms “end-of-pipe” and “stormwater outfall” will be synonymous.

**VISUAL INSPECTION OVERVIEW**

This section contains an overview of major outfall visual inspections and inspection documentation procedures. Appendix 6-A contains the visual inspection form, its completion guidance, and a checklist for suggested field equipment.

**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, unless permitted by the Colorado Discharge Permit System.

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.

**PROCEDURE**

**Training**

Crew supervisors are responsible for arranging training for field crews. At a minimum, training shall consist of personnel reviewing the inspection form and guidance presented in Appendix 6-A.

Field staff shall be observant in their daily routines to watch for evidence of illicit discharges or unusual flows from the storm drain systems. Should a suspected discharge be discovered, it should be reported to an immediate supervisor. The Supervisor will in turn relay the information to i City of Centennial Maintenance Request Specialist at 720-874-ROAD or 7623.

The Maintenance Request Specialist will fill out an MRF Form regarding the discharge based on the information obtained from the observer. If an illicit discharge is pin-pointed, the observer shall record, as applicable, the location, time, date, license plate number, and take photos. This information shall be turned over to the iCity of Centennial Maintenance Request Specialist, who will fill out the appropriate form and contact the MRF Field Crew Leader. County MRF Field Crew staff shall in turn perform a field verification of the discharge. The observer need NOT approach the potential violator at the time of the incident. However, if the violator is non-threatening, information for Part 3 of the Illicit Discharge Observation Form would be beneficial.

**Safety**

Keep safety considerations at the forefront of observation procedures at all times. Likely hazards should be anticipated and avoided. Never approach, contact, or sample a substance if the toxicity is at all suspect. The observation should be investigated in groups of two or more whenever possible. Never open a sealed container to check the contents. If a highly toxic or flammable substance is discovered, the field crew staff should leave the immediate area and contact the iCity of Centennial Sheriff’s Office. If there is any question about a substance, contact a supervisor.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) spills are referred to the Sheriff’s Office immediately for processing by either the Emergency Preparedness Division (Contact: Randy Councell) or by the Environmental Crimes Unit (Contact: Karl Ditus) by either the Supervisor or the MRF Field Crew! The emergency contact number is 303-795-4911.

**INSPECTION LOCATIONS**

The MRF Field Crew Leader shall provide locations of the outfall through the use of subdivision, street, and descriptive location. This process will be used until complete identification and mapping of the City’s MS4 has been completed. If available, a GPS point will be recorded for each outfall site.

**OBSERVATION AREAS**

Certain geographic areas in the City of Centennial are more prone to illicit discharges than others. Areas to be more observant in can be identified from past reports and by the stormwater history. The following areas will typically have a higher potential for illicit discharges:

* Commercial/industrial areas,
* Older areas of the County that predate more stringent construction codes regarding illegal connections, and
* Areas where illegal dumping or apparently contaminated discharges have been reported.

MRF Field Crew staff may observe dry-weather flows for odor, color, turbidity, and floatable matter. Unusual flows, pungent odors and discoloration or oil substances in the water, stains or waste residues in ditches, channels, or drain boxes are indicators of an illicit discharge. Observe outfalls for deposits and stains, vegetation, and damage to outfall structures.

**ALLOWED DISCHARGES**

NON-STORMWATER DISCHARGES THAT THE CITY OF CENTENNIAL’S IDDE PROGRAM ALLOWS:

|  |  |
| --- | --- |
| ⬩ 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 |  |

**FIELD INSPECTION FORMS**

The Scheduled Visual Inspection Form provides a record of each site visit. A Scheduled Visual Inspection Form shall be filled out in the field for all listed outfalls. If a site cannot be inspected, MRF Field Crew staff shall record an explanation of the circumstances on the form. The form and instructions for completion are presented in Appendix 6-A. A brief description of each part of the Visual Inspection Form follows:

**General Information**

This section identifies the jurisdiction, the drainageway, the outfall, lead field staff conducting the inspection, the date and time the outfall was inspected, and approximate days since the last rainfall. MRF Field Crew staff are also asked to verify the map to the location is accurate, and note any incorrect information on the map and inspection form.

**End of Pipe Information and Visual Observations**

In these sections, MRF Field Crew staff record whether water is flowing from the end-of-pipe, the appearance of the water including color, turbidity (muddiness), the presence of petroleum product, and sediment or debris accumulation in the end-of-pipe or ditch. If debris has accumulated in the end-of-pipe, MRF Field Crews are asked to estimate the amount and describe the type of debris. MRF Field Crew staff will bring inspection forms to a supervisor’s attention if an outfall, pipe or ditch is more than one-half filled with debris or sediment, or is grate is clogged.

**Additional Information**

Observations about an active IDDE event, if occurring while on a scheduled visit to the draingeway, are recorded in this section.

**FLAGGED VISUAL INSPECTION FORMS**

Inspection forms for sites may be flagged if end of pipes or ditches are greater than 50% filled with sediment or debris or if grate is clogged more than 50%. Flagged forms will be considered by the MRF Field Crew Leader. Corrective maintenance will be performed on outfall sites as needed based on operations criteria. These maintenance activities will be tracked in the Mapping/GIS System.

**COMPLETED VISUAL INSPECTION FORMS**

MRF Field Crew staff will turn in completed forms on a daily basis to their MRF Field Crew Leader. The MRF Field Crew Leader will forward, upon completion, the completed inspection forms to the Program #3 Manager for visual inspection data management.

#### APPENDIX 6-1A

Scheduled Inspection of the MS4 Observation Form

**PART 1 GENERAL INFORMATION**

**SCHEDULED INSPECTION OF THE MS4**

**OBSERVATION FORM**

*Address/Location*: *Drainageway:*

*Date:* *Time:* *Crew Lead*: *Jurisdiction:*

*How Long Since Last Rainfall?* 🞎 Raining now 🞎 0-2 Days 🞎 3 or more Days 🞎 Unknown

**PART 2 END-OF-PIPE INFORMATION & VISUAL OBSERVATIONS**

*End of Pipe Flows Into*:  Drainageway 🞎 Pond 🞎 Stilling Basin 🞎Other Wetlands?  Yes  No

*End of Pipe Submerged?* 🞎No 🞎Yes If yes, how much? 🞎25% or less 🞎about 50%\* 🞎more than 50%\*

*End of Pipe Crushed?* 🞎 No 🞎 Yes If yes, how much? 🞎25% or less 🞎about 50%\* 🞎almost closed\*

*Grate on End of Pipe?* 🞎No 🞎Yes If yes, is grate plugged? 🞎25% or less 🞎about 50%\* 🞎more than 50%\*

If yes, is grate locked? Yes  No Condition?

*Water Flowing From End of Pipe?* 🞎 No 🞎 Yes Comments:

If yes, what does water look like? 🞎Clear 🞎Colored, what color? 🞎 Muddy  Other If yes, petroleum products present? 🞎 No 🞎 Yes If yes, 🞎 Floating globs (visible product) 🞎 Moving sheen

*Sediment Accumulation in Pipe?* 🞎No 🞎Yes Comments:

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

*Debris Accumulation in Pipe?* 🞎No 🞎Yes Comments:

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

Describe debris:

*If End of Pipe Flows to a Rundown, Stilling Basin, or Pond is there (Near End of Pipe):*

Sediment accumulation in rundown, stilling basin or pond? 🞎 No 🞎 Yes

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

Debris accumulation in rundown, stilling basin, or pond? 🞎 No 🞎 Yes

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

Describe debris:

*Is Erosion Occurring at the End of the Outfall Pipe*? 🞎 No 🞎 Yes Comments:

If yes, describe:

Note: If the answer to a question has this \* next to the entry, flag this form for a crew leader’s attention by placing an “x” in the box to the right

**PART 3 ADDITIONAL INFORMATION IF OBSERVING ACTIVE IDDE INCIDENT**

DISCHARGER NAME/ADDRESS:

DISCHARGER LICENSE PLATE: DISCHARGER VEHICLE:

COMMENTS:

**PART I GENERAL INFORMATION**

**Map to Location**: Verify the map guiding you to the outfall location is accurate. Make location corrections to the map and/or in the inspection form. If the outfall cannot be found based on inspection crew experience or map information, make a note and return the uncompleted form and map to crew leader. Note jurisdiction on form.

INSTRUCTIONS FOR COMPLETION OF THE ANCILLARY INSPECTION FORM

A separate form must be filled out for each outfall. Answer all questions on the form.

**Date, Time and Field Crew Lead**. When you arrive at an outfall to conduct the inspection, write the permanent outfall identification number on the form. Record the date and time the inspection is made. Fill in the name of the person conducting the inspection.

**How Long Since Last Rainfall?** Check the box that best represents when the last rainfall occurred. “Rainfall” is defined as a rainstorm big enough to cause runoff from the streets to enter the local storm drains being inspected. Indicate if you do not know the date of the last rainfall.

**PART 2 END OF PIPE AND VISUAL OBSERVATIONS**

The “**end-of-pipe**” is defined as the open-end of a pipe discharging stormwater from a piped stormwater conveyance system into the environment.

**Water Flowing from End-of-Pipe?** Check the NO box if there is no water flowing out of the end-of-pipe. Note: If you see standing water in the end-of-pipe or the end-of-pipe is partially submerged in water and you cannot determine if the water is actually flowing out of the pipe, also check the NO box. Check the YES box only if water is flowing out of the end-of-pipe. If you checked the YES box, you also need to answer the questions about the quality of the water flowing out of the pipe. Check the appropriate boxes for the water quality questions.

**If yes, what does water look like?**

**Clear** (not colored): Imagine a glass of drinking water, you can see through the water and the water is not colored. Is this what the water flowing from the end-of-pipe looks like?

**Colored**: Imagine a glass of tea, you can see through the water, but the water is colored. Is this what the water looks like? Be careful not to let the color of subsurface objects fool you. For example, green algae under the water can give water the appearance of being green. Color can range from light to dark. If the water seems very lightly colored but you are in doubt, do not mark the “Colored” box.

**Muddy**: You cannot see through the water (it has a cloudy or muddy appearance).

**If yes, petroleum products present in water?** Imagine pouring new or used motor oil into water. Do you see this effect in the water flowing from the end-of-pipe? Unless you see floating globs (visible product) or a moving sheen of oil in the water, mark NO.

**Sediment Accumulation in Pipe?** If you can see sediment in the pipe, check the YES box. Then estimate how much sediment is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or “more than ½ full” box, also check the box at the bottom of the page to flag the form for a supervisor’s attention.

**Debris Accumulation in Pipe?** If you see any debris piled up in the pipe, check the YES box. Then estimate how much debris is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or “more than ½ full” box, also check the box at the bottom of the page to flag the form for a crew leader’s attention.

**If the“End of Pipe” Flows into a rundown, stilling basin or pond, is there (near end of pipe) Sediment Accumulation?** If you can see sediment in the rundown, stilling basin, or pond, check the YES box. Then estimate how much sediment is present (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or “more than ½ full” box, also check the box at the bottom of the page to flag the form for a crew leader’s attention.

**Debris Accumulation?** If you see any debris piled up in the rundown, stilling basin or pond, check the YES box. Then estimate how much debris is present (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or more than ½ full” box, also check the box at the bottom of the page to flag the form for a crew leader’s attention.

**PART 3 ADDITIONAL INFORMATION**

As needed, record any observation information for an active IDDE incident you may be a witness to in the field.

**FIELD EQUIPMENT CHECKLIST**

🞎Appropriate protective work clothing and boots🞎 Safety and communication equipment 🞎 Outfall location maps

🞎Clipboard 🞎 Visual Inspection Forms 🞎 Pencil or Waterproof permanent ink pen  Mosquito protection if appropriate

**THE CITY OF CENTENNIAL SOP/IDDE 6-2**

**Ancillary Inspection Program for MS4 Illicit Discharges**

**The City of Centennial SOP/IDDE 6-2**

Ancillary Inspection Program for MS4 Illicit Discharges

**INTRODUCTION**

*The City of Centennial Visual Observation & Inspection Program for MS4 Illicit Discharges* SOP has been developed to comply with the WQCD’s CDPS Stormwater Management Program Permit No. COR-080010. The Permit requires that a program be developed to address the discharge of illicit (non-stormwater) pollutants into the City’s MS4.

The quality of stormwater entering the waters of the state within the City relies heavily on City field staff monitoring the storm drainage systems. This program utilizes ancillary staff within the Public Works Department who are in the drainageways for other purposes (mosquito and animal control personnel, surveyors, and the like) trained in the detection of pollutants can prevent and help eliminate sources of impurities to the waterways. To establish a program for detecting pollutants in storm drain manholes, inlets, and outfalls, a standard procedure for these City staff has been developed.

**DEFINITION OF AN ILLICIT DISCHARGE**

An illicit discharge is a release to a municipal storm sewer or drainage way that is not composed entirely of stormwater, unless permitted by the Colorado Discharge Permit System.

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: use 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.

**PROCEDURE**

**Training**

Field staff, in the following Cinty departments, will be given basic training on the types of illicit discharges that may occur so that they may be trained observers while in the draingeway conducting their routine work:

* Construction (GESC) Inspection,
* Land Development Services Inspection
* CIP Inspection
* Road and Bridge Maintenance,
* Mapping,
* Animal Control,
* Parks and Trails, and
* Building Inspection.

Field staff shall be observant in their daily routines to watch for evidence of illicit discharges or unusual flows from the storm drain systems. Should a suspected discharge be discovered, it should be reported to the immediate Supervisor. The Supervisor will in turn relay the information to i City of Centennial Maintenance Request Specialist at 720-874-ROAD or 7623.

The employee or the supervisor will fill out an Illicit Discharge Form regarding the discharge, or compile applicable information for reporting. If an illicit discharge is pin-pointed, the observer shall record, as applicable, the location, time, date, license plate number, and take photos. This information shall be turned over to the Maintenance Request Specialist, who shall inform the MRF Crew Leader who will perform a field verification of the discharge. The observer need NOT approach the potential violator at the time of the incident. However, if the violator is non-threatening, information for Part 3 of the Illicit Discharge Observation Form would be beneficial.

**SAFETY**

Keep safety considerations at the forefront of observation procedures at all times. Likely hazards should be anticipated and avoided. Never approach, contact, or sample a substance if the toxicity is at all suspect. The observation should be investigated in groups of two or more whenever possible. Never open a sealed container to check the contents. If a highly toxic or flammable substance is discovered, the maintenance personnel should leave the immediate area and contact the i City of Centennial Sheriff’s Office. If there is any question about a substance, contact a supervisor.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) spills are referred to the Sheriff’s Office immediately for processing by the Emergency Preparedness Division by either the Supervisor or MRF Field Crew Leader! The emergency contact number is 303-795-4911.

**OBSERVATION AREAS**

Certain geographic areas in the City of Centennial are more prone to illicit discharges than others. Areas to be more observant in can be identified from past reports and by the stormwater history. The following areas will typically have a higher potential for illicit discharges:

* Commercial/industrial areas,
* Older areas of town that predate more stringent construction codes regarding illegal connections, and
* Areas where illegal dumping or apparently contaminated discharges have been reported.

Field staff may observe dry-weather flows for odor, color, turbidity, and floatable matter. Unusual flows, pungent odors and discoloration or oil substances in the water, stains or waste residues in ditches, channels, or drain boxes are indicators of an illicit discharge. Observe outfalls for deposits and stains, vegetation, and damage to outfall structures.

**ALLOWED DISCHARGES**

NON-STORMWATER DISCHARGES THAT COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT WATER QUALITY CONTROL DIVISION ALLOWS:

|  |  |
| --- | --- |
| ⬩ 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 |  |

**ILLICIT DISCHARGE OBSERVATION FORM**

The Illicit Discharge Observation Form provides a record of each field observation of an illicit discharge. An Illicit Discharge Observation Form will be filled out when a suspected illicit discharge event occurs. The form and instructions for completion are presented in Appendix 6-B. A brief description of each part of the Illicit Discharge Observation Form follows:

**General Information**

This section identifies the location, date, time and observer of the event. In addition, weather conditions for the area are recorded.

**Description of Observation**

In this section, field staff record a narrative of the suspected illicit discharge event, whether water is flowing from the end-of-pipe, the appearance of the water including color, turbidity (muddiness), and the presence of petroleum products.

**Additional Information**

If available, the discharger name, address, and vehicle information are recorded in this section. Any additional explanations in response to visual inspection questions, and observations about the site not covered by the form questions, are recorded in this section. Forms are handed in to the Maintenance Request Specialist for input into the MRF database, assignment to the MRF Field Crew Leader, and distribution back to the Stormwater Department, Program #3 Manager and the Sheriff’s Office, as appropriate.

**FOLLOW-UP INSPECTIONS**

Follow up inspections will be conducted by Stormwater engineering staff accompanied by the MRF Field Crew Leader. If additional maintenance activities are needed, appropriate maintenance staff will be contacted by the MRF Field Crew Leader and information will be tracked in the MRF Database System.

**COMPLETED ILLICIT DISCHARGE OBSERVATION FORMS**

Field staff will contact the Maintenance Request Specialist, who will, in turn, contact either the Sheriff’s Office or the MRF Crew Leader for immediate follow-up. MRF Field Crew staff will turn in completed forms in a timely manner to their MRF Field Crew Leader. The MRF Field Crew Leader will forward the completed inspection forms to the Program #3 Manager for illicit discharge tracking data management.

#### APPENDIX 6-2A

Ancillary Inspection of the MS4 Observation Form

Temporary Field ID

Database ID

**PART 1 GENERAL INFORMATION**

**ANCILLARY INSPECTION OF THE MS4**

**OBSERVATION FORM**

*Address/Location*: *Drainageway:*

*Date:* *Time:* *Crew Lead*: *Jurisdiction:*

*How Long Since Last Rainfall?* 🞎 Raining now 🞎 0-2 Days 🞎 3 or more Days 🞎 Unknown

**PART 2 END-OF-PIPE INFORMATION & VISUAL OBSERVATIONS**

*End of Pipe Flows Into*:  Drainageway 🞎 Pond 🞎 Stilling Basin 🞎Other Wetlands?  Yes  No

*End of Pipe Submerged?* 🞎No 🞎Yes If yes, how much? 🞎25% or less 🞎about 50%\* 🞎more than 50%\*

*End of Pipe Crushed?* 🞎 No 🞎 Yes If yes, how much? 🞎25% or less 🞎about 50%\* 🞎almost closed\*

*Grate on End of Pipe?* 🞎No 🞎Yes If yes, is grate plugged? 🞎25% or less 🞎about 50%\* 🞎more than 50%\*

If yes, is grate locked? Yes  No Condition?

*Water Flowing From End of Pipe?* 🞎 No 🞎 Yes Comments:

If yes, what does water look like? 🞎Clear 🞎Colored, what color? 🞎 Muddy  Other If yes, petroleum products present? 🞎 No 🞎 Yes If yes, 🞎 Floating globs (visible product) 🞎 Moving sheen

*Sediment Accumulation in Pipe?* 🞎No 🞎Yes Comments:

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

*Debris Accumulation in Pipe?* 🞎No 🞎Yes Comments:

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

Describe debris:

*If End of Pipe Flows to a Rundown, Stilling Basin, or Pond is there (Near End of Pipe):*

Sediment accumulation in rundown, stilling basin or pond? 🞎 No 🞎 Yes

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

Debris accumulation in rundown, stilling basin, or pond? 🞎 No 🞎 Yes

If yes, how much? 🞎 25% or less filled in 🞎 About 50% filled in\* 🞎 More than 50% filled in\*

Describe debris:

*Is Erosion Occurring at the End of the Outfall Pipe*? 🞎 No 🞎 Yes Comments:

If yes, describe:

Note: If the answer to a question has this \* next to the entry, flag this form for a crew leader’s attention by placing an “x” in the box to the right

**PART 3 ADDITIONAL INFORMATION IF OBSERVING ACTIVE IDDE INCIDENT**

DISCHARGER NAME/ADDRESS:

DISCHARGER LICENSE PLATE: DISCHARGER VEHICLE:

COMMENTS:

**PART I GENERAL INFORMATION**

**Map to Location**: Verify the map guiding you to the outfall location is accurate. Make location corrections to the map and/or in the inspection form. If the outfall cannot be found based on inspection crew experience or map information, make a note and return the uncompleted form and map to crew leader. Note jurisdiction on form.

INSTRUCTIONS FOR COMPLETION OF THE ANCILLARY INSPECTION FORM

A separate form must be filled out for each outfall. Answer all questions on the form.

**Date, Time and Field Crew Lead**. When you arrive at an outfall to conduct the inspection, write the permanent outfall identification number on the form. Record the date and time the inspection is made. Fill in the name of the person conducting the inspection.

**How Long Since Last Rainfall?** Check the box that best represents when the last rainfall occurred. “Rainfall” is defined as a rainstorm big enough to cause runoff from the streets to enter the local storm drains being inspected. Indicate if you do not know the date of the last rainfall.

**PART 2 END OF PIPE AND VISUAL OBSERVATIONS**

The “**end-of-pipe**” is defined as the open-end of a pipe discharging stormwater from a piped stormwater conveyance system into the environment.

**Water Flowing from End-of-Pipe?** Check the NO box if there is no water flowing out of the end-of-pipe. Note: If you see standing water in the end-of-pipe or the end-of-pipe is partially submerged in water and you cannot determine if the water is actually flowing out of the pipe, also check the NO box. Check the YES box only if water is flowing out of the end-of-pipe. If you checked the YES box, you also need to answer the questions about the quality of the water flowing out of the pipe. Check the appropriate boxes for the water quality questions.

**If yes, what does water look like?**

**Clear** (not colored): Imagine a glass of drinking water, you can see through the water and the water is not colored. Is this what the water flowing from the end-of-pipe looks like?

**Colored**: Imagine a glass of tea, you can see through the water, but the water is colored. Is this what the water looks like? Be careful not to let the color of subsurface objects fool you. For example, green algae under the water can give water the appearance of being green. Color can range from light to dark. If the water seems very lightly colored but you are in doubt, do not mark the “Colored” box.

**Muddy**: You cannot see through the water (it has a cloudy or muddy appearance).

**If yes, petroleum products present in water?** Imagine pouring new or used motor oil into water. Do you see this effect in the water flowing from the end-of-pipe? Unless you see floating globs (visible product) or a moving sheen of oil in the water, mark NO.

**Sediment Accumulation in Pipe?** If you can see sediment in the pipe, check the YES box. Then estimate how much sediment is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or “more than ½ full” box, also check the box at the bottom of the page to flag the form for a supervisor’s attention.

**Debris Accumulation in Pipe?** If you see any debris piled up in the pipe, check the YES box. Then estimate how much debris is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or “more than ½ full” box, also check the box at the bottom of the page to flag the form for a crew leader’s attention.

**If the“End of Pipe” Flows into a rundown, stilling basin or pond, is there (near end of pipe) Sediment Accumulation?** If you can see sediment in the rundown, stilling basin, or pond, check the YES box. Then estimate how much sediment is present (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or “more than ½ full” box, also check the box at the bottom of the page to flag the form for a crew leader’s attention.

**Debris Accumulation?** If you see any debris piled up in the rundown, stilling basin or pond, check the YES box. Then estimate how much debris is present (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box. Note: If you checked the “about ½ full” or more than ½ full” box, also check the box at the bottom of the page to flag the form for a crew leader’s attention.

**PART 3 ADDITIONAL INFORMATION**

As needed, record any observation information for an active IDDE incident you may be a witness to in the field.

**FIELD EQUIPMENT CHECKLIST**

🞎Appropriate protective work clothing and boots🞎 Safety and communication equipment 🞎 Outfall location maps

🞎Clipboard 🞎 Visual Inspection Forms 🞎 Pencil or Waterproof permanent ink pen  Mosquito protection if needed

**THE CITY OF CENTENNIAL SOP/IDDE 6-3**

**Visual Observation & Inspection Program for MS4 Illicit Discharges**

**The City of Centennial SOP/IDDE 6-3**

Visual Observation & Inspection Program for MS4 Illicit Discharges

**INTRODUCTION**

*The City of Centennial Visual Observation & Inspection Program for MS4 Illicit Discharges* SOP has been developed to comply with the WQCD’s CDPS Stormwater Management Program Permit No. COR-080010. The Permit requires that a program be developed to address the discharge of illicit (non-stormwater) pollutants into the City’s MS4.

The quality of stormwater entering the waters of the state within the City relies heavily on City field staff monitoring the storm drainage systems. City staff who drive a City vehicle and have the opportunity for a visual, albeit drive-by, inspection of the drainageways are trained in the detection of pollutants and can prevent and help eliminate sources of impurities to the waterways. To establish a program for detecting pollutants in storm drain manholes, inlets, and outfalls, a standard procedure for these City staff has been developed.

**DEFINITION OF AN ILLICIT DISCHARGE**

An illicit discharge is a release to a municipal storm sewer or drainage way that is not composed entirely of stormwater, unless permitted by the Colorado Discharge Permit System.

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: use 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.

**PROCEDURE**

**Training**

Field staff, in the following County departments, will be given basic training on the types of illicit discharges that may occur:

* Construction (GESC) Inspection,
* Land Development Services Inspection
* CIP Inspection
* Road and Bridge Maintenance,
* Animal Control,
* Mapping Services,
* Parks and Trails, and
* Building Inspection.

Field staff shall be observant in their daily routines to watch for evidence of illicit discharges or unusual flows from the storm drain systems. Should a suspected discharge be discovered, it should be reported to the immediate Supervisor. The Supervisor will in turn relay the information to i City of Centennial Maintenance Request Specialist at 720-874-ROAD or 7623.

The employee or the supervisor will fill out an Illicit Discharge Form regarding the discharge, or compile applicable information for reporting. If an illicit discharge is pin-pointed, the observer shall record, as applicable, the location, time, date, license plate number, and take photos. This information shall be turned over to the Maintenance Request Specialist, who shall inform the MRF Crew Leader who will perform a field verification of the discharge. The observer need NOT approach the potential violator at the time of the incident. However, if the violator is non-threatening, information for Part 3 of the Illicit Discharge Observation Form would be beneficial.

**SAFETY**

Keep safety considerations at the forefront of observation procedures at all times. Likely hazards should be anticipated and avoided. Never approach, contact, or sample a substance if the toxicity is at all suspect. The observation should be investigated in groups of two or more whenever possible. Never open a sealed container to check the contents. If a highly toxic or flammable substance is discovered, the maintenance personnel should leave the immediate area and contact the Sheriff’s Office. If there is any question about a substance, contact a supervisor.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) spills are referred to the Sheriff’s Office immediately for processing by the Emergency Preparedness Division by either the Supervisor or MRF Field Crew Leader! The emergency contact number is 303-795-4911.

**OBSERVATION AREAS**

Certain geographic areas in the City of Centennial are more prone to illicit discharges than others. Areas to be more observant in can be identified from past reports and by the stormwater history. The following areas will typically have a higher potential for illicit discharges:

* Commercial/industrial areas,
* Older areas of town that predate more stringent construction codes regarding illegal connections, and
* Areas where illegal dumping or apparently contaminated discharges have been reported.

Field staff may observe dry-weather flows for odor, color, turbidity, and floatable matter. Unusual flows, pungent odors and discoloration or oil substances in the water, stains or waste residues in ditches, channels, or drain boxes are indicators of an illicit discharge. Observe outfalls for deposits and stains, vegetation, and damage to outfall structures.

**ALLOWED DISCHARGES**

NON-STORMWATER DISCHARGES THAT COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT WATER QUALITY CONTROL DIVISION ALLOWS:

|  |  |
| --- | --- |
| ⬩ 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 |  |

**ILLICIT DISCHARGE OBSERVATION FORM**

The Illicit Discharge Observation Form provides a record of each field observation of an illicit discharge. An Illicit Discharge Observation Form will be filled out when a suspected illicit discharge event occurs. The form and instructions for completion are presented in Appendix 6-B. A brief description of each part of the Illicit Discharge Observation Form follows:

**General Information**

This section identifies the location, date, time and observer of the event. In addition, weather conditions for the area are recorded.

**Description of Observation**

In this section, field staff record a narrative of the suspected illicit discharge event, whether water is flowing from the end-of-pipe, the appearance of the water including color, turbidity (muddiness), and the presence of petroleum products.

**Additional Information**

If available, the discharger name, address, and vehicle information are recorded in this section. Any additional explanations in response to visual inspection questions, and observations about the site not covered by the form questions, are recorded in this section. Forms are handed in to the Maintenance Request Specialist for input into the MRF database, assignment to the MRF Field Crew Leader, and distribution back to the Stormwater Department, Program #3 Manager and the Sheriff’s Office, as appropriate.

**FOLLOW-UP INSPECTIONS**

Follow up inspections will be conducted by Stormwater engineering staff accompanied by the MRF Field Crew Leader. If additional maintenance activities are needed, appropriate maintenance staff will be contacted by the MRF Field Crew Leader and information will be tracked in the MRF Database System.

**COMPLETED ILLICIT DISCHARGE OBSERVATION FORMS**

Field staff will contact the Maintenance Request Specialist, who will, in turn, contact either the Sheriff’s Office or the MRF Crew Leader for immediate follow-up. MRF Field Crew staff will turn in completed forms in a timely manner to their MRF Field Crew Leader. The MRF Field Crew Leader will forward the completed inspection forms to the Program #3 Manager for illicit discharge tracking data management.

**APPENDIX 6-3A**

**Illicit Discharge Observation Form For County Staff During Routine Job FunctionsILLICIT DISCHARGE OBSERVATION FORM**

**PART 1 - GENERAL INFORMATION**

Address/location?

Date: Time: Observer:

How long since last rainfall?  Raining now  0-2 days  3 or more days

Unknown

**PART 2 - DESCRIPTION OF OBSERVATION**

Suspected Substance:

Discharge into:  Storm Drain  Stream  Wetland Ditch  Gutter

Other:

Water flowing from end of pipe?  Yes  No

If yes, what does water look like?  Clear  Colored, what color?

Muddy

Are petroleum products present?  No Yes

If yes, in the form of:  Floating globs (visible product) Moving Sheen

**PART 3 - ADDITIONAL INFORMATION:**

Discharger Name:

Discharger Address:

Discharger License Plate: Discharger Vehicle:

Department Supervisor:

# **CHAPTER 7 – TRACING AND TRACKING AN ILLICIT DISCHARGE SOURCE – STANDARD OPERATING PROCEDURES**

**INTRODUCTION**

Reporting of an illicit discharge in the City of Centennial MS4 will occur through citizen observation, field staff observation (see Chapter 6 for SOPs), the City of Centennial stormwater hotline, “One Call, That’s All!” 720-874-ROAD, the City of Centennial stormwater web-site, or other miscellaneous means. Once a report is received, the following steps will be addressed:

Reported in Mapped MS4 area

Reports received in the City of Centennial MS4 area that has been previously mapped can be traced through the Mapping/GIS and MRF process. The illicit discharge tracing function will allow the user to move upstream or downstream from the sighting of the illicit discharge. Maps can be produced and reviewed in the field with notes taken by field staff to be added to the process for follow-up.

The MRF process for illicit discharges through the use of an MRF Form located within the system will collect information regarding the illicit discharge, including type of discharge, reporting party, remarks on the discharge, jurisdiction responsible, entity responsible for maintenance (for notification), discharge sources, and type of mitigation used for the discharge. In addition, this system allows for updates and follow-up review.

Reported in Unmapped MS4 area

Reports received in unmapped areas of the City of Centennial MS4 will have information collected through the use of the Tracing/Tracking Illicit Discharge Form found in SOP/IDDE 7-1 of this Manual. (SOP/IDDE 7-1 for this type of Tracing/Tracking is found as a separate section within this chapter.) Information collected in this manner will be tracked through data collection in the office and ultimately will be incorporated into the Mapping/GIS and MRF process.

**NOTE:** SOP/IDDE 7-1 and the Tracing/Tracking Illicit Discharge Form can be used for any illicit discharge tracing/tracking process throughout the City. This information will be added to the MRF process as received and available.

Inactive Illicit Discharge Reporting

Through field observation or citizen reporting there may be the instance where an illicit discharge is untraceable. There are a variety of techniques available for use in tracing an illicit discharge. In addition to the ones mentioned above, the following techniques may be considered: manhole observation, video inspection, smoke testing, dye testing, aerial infrared and thermal photography, and tracking illegal dumping. Procedures for these processes are discussed below.

**OTHER TRACING OPTIONS**

The following are possible options for tracing illicit discharges in the City of Centennial MS4:

**MANHOLE OBSERVATIONS**

A key tracing technique is to follow dry-weather flows upstream along the conveyance system to bracket the location of the source. This can be accomplished by taking the following steps:

* Consult the MS4 map.
* Check the next “upstream” manhole with a junction to see if there is evidence of discharge. Consider sampling each manhole that has a discharge.
* Repeat these steps until a junction is found with no evidence of discharge; the discharge source is likely to be located between the junction with no evidence of discharge and the next downstream junction.
* Be aware of the surrounding areas and look for water in gutters and streets.

Manhole observations can be time-consuming, but they are generally a necessary step before conducting other tests.

**VIDEO INSPECTION**

Mobile video cameras can be guided remotely through storm sewer lines to observe possible illegal connections into storm sewer systems and record observations on a videocassette or DVD. County staff can observe the videos and note any visible illegal connections. This technique is time-consuming and expensive but thorough and usually definitive, and it does not require the intrusion on members of the public that some of the other methods do.

**SMOKE TESTING**

This technique involves injecting non-toxic smoke into 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. The injection is accomplished by placing a smoke bomb in the storm sewer manhole below ground and forcing air in after it. Smoke-generating machines can also be used. Test personnel will be stationed at points of suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm sewer infrastructure). Prior to performing this test, it is necessary to inform building owners and occupants in the area in advance. It is also advisable to inform the police and fire departments.

For a more thorough smoke-test program, the sanitary sewer lines can also be smoked. For houses that do not emit smoke during either the sanitary sewer or the storm sewer system tests, sewer gas may be venting inside, which is hazardous. Interviews with various IDDE program staff at other permitted MS4s suggest that the smoke-test method is more effective in infiltration/inflow investigations of the sanitary sewer system than in detecting illegal connections to the storm sewer system.

Smoke may cause minor irritation of respiratory passages; residents with respiratory conditions should receive special attention to determine if it is safe for them to be present for the testing. Smoke testing is typically used to survey an area all at once, in contrast to dye testing, which tests one building at a time.

**DYE TESTING**

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 this test, it is necessary to inform building owners and occupants in advance and gain permission for entry. Local public health and state water quality staff should also be notified so that they will be prepared to respond to citizens calling about any dye observed in surface waters.

To perform the test, a crew of two or more people is needed (ideally, all with two-way radios). One person is inside the building; the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which should be opened) and/or outfalls. The inside person drops dye into a plumbing fixture (i.e., toilet or sink) and runs a sufficient amount of water to move the dye through the plumbing system. The inside person then radios to the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer and sanitary sewer, recording the presence or absence of the dye.

The test is relatively quick (about 30 minutes per test), effective (results are usually definitive), and cheap. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific houses or businesses.

**AERIAL INFRARED AND THERMAL PHOTOGRAPHY**

Aerial infrared and/or thermal photography can be used to locate illicit discharges from outfalls and failing septic systems using temperature and vegetation as markers. This technique requires knowledge of aerial photo interpretation. When using aerial infrared or thermal photographs, do the following:

* For outfalls -
  + Note if discharge has a higher temperature than that of the stream; and
  + Note if algae growth is concentrated near an outfall.
    - For potentially failing septic systems -
      * Note evidence of increased moisture in surrounding soil;
      * Observe vegetation located close to the potentially failing septic system, and note any increase in vegetation compared to the surrounding area; and
      * Observe any increase in temperature readings at the septic system location.

This is still a developing technology and not commonly used for IDDE programs. Further tests may still be needed to determine specific houses/businesses with illegal connections. This technique has been used primarily for the detection of failing septic systems, which are only considered “illicit discharges” under the Phase II Stormwater program if they discharge into the storm sewer system.

**TRACKING ILLICIT DISCHARGE EVENTS**

The City of Centennial will track information provided through the various tracing options outlined in this chapter in a database format. This database will include information on date of inspection, type of discharge, location of facility, source of discharge, follow-up action needed, jurisdiction and maintenance responsibilities, type of mitigation used and comments on site. In addition, if available, costs of action taken will be included in the information collected.

**REFERENCES: CHAPTER 7**

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**THE CITY OF CENTENNIAL SOP/IDDE 7-1**

**TRACING AND TRACKING SOP**

**THE CITY OF CENTENNIAL SOP/IDDE 7-1**

TRACKING AN ILLICIT DISCHARGE EVENT

**INTRODUCTION**

The purpose of this SOP is to establish a procedure for tracking information gathered by the City of Centennial IDDE Program. Tracking these data will provide information that will assist in determining priority areas, tracing sources of illicit discharges and removing sources of illicit discharges. Tracking the data collected in the IDDE Program will play an important role in the evaluation and refinement of the Program. In addition, the tracking database will provide reporting information required by the WQCD.

It is important that the appropriate information be gathered and documented when responding to an illicit discharge report. In some cases, the incident may require legal action. Legal enforcement and/or penalties may depend upon the integrity of the information that is gathered at the scene.

In extreme, rare cases, the incident could become the focus of a judicial process that would require the first staff person on site to provide valuable information, and possibly testimony and evidence. For that reason, it is necessary to be as thorough as possible on the initial investigation.

**PROCEDURE**

Items that will be tracked in the IDDE database include:

* Number of inspections (routine and suspected illicit discharge),
* Number of traced illicit discharges, by method (routine inspection, public complaint, dye testing, etc.), and
* Number of illicit discharge sources eliminated.

The following items shall be collected and entered into the Inspection Form database:

* Date and time of inspection,
* Type of inspection (routine or suspected illicit discharge),
* Location of facility inspected,
* Presence of illicit discharge, including:
* Type of illicit discharge,
* Source of illicit discharge,
* Action taken, and
  + Maintenance (needed or provided).

The following additional items may be tracked if available:

* Entities involved in any actions taken,
* Cost of actions taken, and
* Cost of tracking illicit discharge, by method.

**CONCLUSION**

It is important to remember that the IDDE Inspection Report items being tracked represent only a small portion of the total information provided. All inspection forms shall be properly filed so that they can be retrieved for further analysis/comparison, legal evidence, or for a WQCD audit.

**THE CITY OF CENTENNIAL IDDE TRACING/TRACKING FORM**

INTRODUCTION – This form or the more standard MRF Form are used to collect information received as a citizen report, MRF Hotline report, stormwater web site report, and for additional input from field staff who have reported an illicit discharge event.

Date of Report/Event Location MRF Number

Description of Alleged Illicit Discharge

Action Taken/Observation

Individuals Contacted

NAME REPRESENTING CONTACT INFO

1.

2.

3.

4.

5.

6.

Photos taken? 🞎 Yes; 🞎 No Follow Visit Needed? 🞎 Yes; 🞎 No

Weather Conditions 🞎 Dry; 🞎 Wet; 🞎 Precipitation within past 2 days; 🞎Unknown

Name of Person Reporting

Contact Information

Statement from Person Reporting

Staff Person Processing the Report

# **CHAPTER 8 – ILLICIT DISCHARGE REPORTING AND ENFORCEMENT**

**INTRODUCTION**

Reports for illicit discharges can be received from a variety of sources. City staff, residents, and individuals passing through the area may report a potential illicit discharge in the City. To respond to these reports, the following procedure has been developed.

**PROCEDURE**

Contact is made with the City through the Stormwater Hotline, ”One Call, That’s All! 720-874-ROAD (7623), Sheriff’s Office (303-795-4911), or City Staff reporting a potential Illicit Discharge. All City calls are forwarded to the Maintenance Request Specialist. This line is available Monday through Friday, during normal business hours. For reporting after hours, a message will be played on the “One Call, That’s All!” phone number that will refer the caller to the Sheriff’s Office non-emergency number.

The Maintenance Request Specialist will take the initial information on the spill event (See SOP/IDDE 7-1).

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) spills are referred to the Sheriff’s Office immediately for processing by the Emergency Preparedness Division. Appropriate tracking of the event will occur through that Department. A copy of this report will be forwarded to the Program #3 Manager i.

Other illicit discharge reports will be completed by Receptionist of office staff and forwarded immediately to the Maintenance Request Specialist, who forwards to the MRF Field Crew Leader for a field visit. Field verification will occur within the first 24 hours of the reported event.

MRF Field Crew staff will do proper containment of the discharge if identified as NOT potentially dangerous, and, if needed, proper disposal of the mitigation materials will occur. If the spill is too large for MRF Field Crew staff to contain, a contracted spill containment company will be contacted for mitigation. If staff feels the spill is of a hazardous nature, the Emergency Preparedness Division of the Sheriff’s Office will be contacted immediately for proper containment and disposal of the spill.

The initial paperwork completed by the Maintenance Request Specialist will be completed by the MRF Field Crew Leader or staff and forwarded to the Program #3 Manager in the i City of Centennial Engineering Division for proper tracking. The Program #3 Manager, as needed, will schedule additional follow-up on the site.

Enforcement and/or fines will be determined by the Sheriff’s Office in conjunction with Colorado Revised Statutes (CRS) § 18-4-511 and CRS § 30-15-401, as applicable.

**THE CITY OF CENTENNIAL SHERIFF’S OFFICE – 1.01.01.001**

**EMERGENCY SERVICES SECTION/HAZMAT**

**Illicit Discharge, Detection, Elimination, and Enforcement**

|  |  |  |  |
| --- | --- | --- | --- |
| arapco_logo_201_pos | Arapahoe County Sheriff’s Office | |  |
| Administrative Services | | |
| EMERGENCY SERVICES SECTION / HAZMAT | | |
| RESPONSE TO INCIDENTS | | |
| Illicit Discharge, Detection, Elimination (IDDE), and Enforcement | | |
| STANDARD: | | |
| Effective Date: 01-14-03 | Revised Date: | |

PURPOSE

The City of Centennial Engineering has developed a Stormwater Hotline, “One Call, That’s All!” 720-874-ROAD. This hotline and the educational process associated with it, is designed to increase the recognition of events that can prove dangerous or detrimental to people, property, or the environment through the storm water systems. This procedure is developed to provide guidance to deal with such a report, an increase in which is likely to be seen.

PROCEDURE

Storm water pollution takes many forms. Debris from construction sites, household chemicals, fertilizers, pet waste, pesticides, landscaping, auto care, lawn care, painting materials and so forth. Some events may be intentional and criminal, while others may be an act of negligence. Regardless, these acts or events can endanger persons, property, or the environment and must be acted upon. This may occur during a storm as the name indicates, or by an act that allows the “product” accessibility to the storm water system. For example, a severe rainstorm picks up construction debris from a site and carries it into a storm drain, or a homeowner or contractor pours leftover paint down a storm drain. Each of these events can have devastating results to downstream interests.

There are numerous ways in which a potential illicit discharge could be reported:

-Storm water hotline, “One Call, That’s ALL!, 720-874-ROAD

-Sheriff’s Office dispatch

-On view by officers

-Referral from City of Centennial Engineering

First and foremost, a reported incident that is perceived to be immediately dangerous to life or health will be acted upon immediately. This process shall include the following:

-Notification of fire response personnel and apparatus.

-Notification of hazardous materials response personnel and apparatus.

-Notification of the Sheriff’s Office on-call HazMat team personnel.

And may include the following:

-Notification of Tri-County Health.

-Notification of The City of Centennial Engineering on-call IDDE (Illicit Discharge Detection and Elimination) personnel.

-Notification of downstream water treatment facilities.

Dependent upon the situation, many other notifications and/or involvement may be required or appropriate. Examples of which include notifications to the National Response Center, Environmental Protection Agency, and the like. All of which should be considered.

Upon notification of an event involving an Illicit Discharge, determination shall be made as to response necessary. Response may include the following:

-Verbal acknowledgement with no further action to be taken.

-Consultation and direction provided without physical response.

-Referral to outside agency (s).

-Response to the scene.

Any incident involving the release of an unknown, hazardous material, or suspected hazardous material will be responded to immediately.

**If an unknown, or hazardous material is suspected, the appropriate protocols for a hazardous materials response will be followed. (See Arapahoe County Hazardous Materials Response Team SOP)**

If the product in question does not pose an immediate threat to life, property, or the environment, is not considered a hazardous material and no criminal activity is suspected the Sheriff’s Office will make no response. The incident shall be referred to City of Centennial Engineering for follow-up. In any event, the recipient will ensure that the agencies involved in the IDDE task force are notified of the report at the earliest opportunity.

Many times, the product dictates the response. However, the incident objectives remain the same:

-Life safety of the responder.

-Life safety of the public.

-Safety of property

-Protection of the environment.

The purpose of a response on the part of the ACSO hazmat team shall be to ensure the safety of all persons, halt the spread of the substance whenever possible, enforce and ensure that cleanup mitigation activities take place, criminal investigation and enforcement. The ACSO HazMat team is not a cleanup company. An authorized cleanup contractor will complete cleanup activities\*.

If cleanup activities are warranted, a “Clean Up Order Notice” will be served upon the responsible party. If criminal activity is suspected, the appropriate investigation will be conducted and an offense report completed.

\*In the case of hazardous material. This list is published and updated regularly, and promulgated by the Arapahoe Hazardous Materials Response Team.

# **CHAPTER 9 – REMOVING THE SOURCE OF AN ILLICIT DISCHARGE**

**INTRODUCTION**

Because there are various sources of illicit discharges to the storm sewer system, there are different kinds of actions the County may have to take to remove those sources and prevent future illicit discharges. This chapter groups those actions into three categories: compliance assistance and enforcement for illegal connections to homes and businesses; proper construction and maintenance of MS4s; and responding to and preventing illegal dumping.

**COMPLIANCE ASSISTANCE AND ENFORCEMENT FOR ILLEGAL CONNECTIONS TO HOMES AND BUSINESSES**

There is a range of ways in which the City may wish to handle the removal of illegal connections between homes or businesses and the storm sewer system. Enforcement measures are spelled out in the required IDDE enforcement mechanism (see Chapter 8), but the City will use judgment about what mix of compliance assistance and enforcement actions is appropriate in a given situation. Typically, the City responds to the discovery of an illegal connection in a graduated manner, beginning with efforts to obtain voluntary compliance and escalating to increasingly severe enforcement actions if compliance is not obtained.

**Voluntary Compliance**

Often, home or business owners are not aware of the existence of illegal connections between their buildings and the storm sewer systems. In these cases, providing the responsible party with information about the connection, its environmental consequences, the applicable regulations, and how to remedy it may be enough to secure voluntary compliance. The cost of removing the connection and reconnecting it to the sanitary sewer system can be an obstacle.

**Enforcement**

The IDDE enforcement steps that the City might take are summarized below:

* The City sends to the property owner a Notice of Violation (NOV), which will require the violator to take steps such as monitoring, elimination of an illicit connection or discharge, or payment of a fine.
* The person receiving the NOV may appeal it.
* If the person receiving the NOV does not appeal or loses the appeal and fails to correct the violation, the City may “take any and all measures necessary to abate the violation and/or restore the property.” The City then may require reimbursement from the violator for the cost of the abatement, including administrative costs.
* The City also has the ability to seek an injunction against the violator, “restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.”

In addition, the City may seek enforcement action from state or federal authorities. Involvement of state or federal authorities may also be necessary if the source of an illicit discharge is located outside of the City boundaries.

**PROPER CONSTRUCTION AND MAINTENANCE OF MS4s**

Some illicit discharge problems may be the responsibility of the City or other special districts. These problems include cross-connections between the sanitary sewer and storm sewer systems and infiltration into damaged or deteriorating storm sewer pipes.

Cross-connections between a municipality’s (or special district’s) sanitary sewer and the City’s MS4 may exist by mistake, because of deterioration over time, or as part of the design in an antiquated system. Complete and accurate maps of the sanitary sewer and storm sewer systems can help identify these cross-connections and prevent them during any new construction that takes place.

Contamination can infiltrate into a cracked or leaking MS4 from leaking sanitary sewer pipes, failing septic systems, or contaminated groundwater. To help prevent this, both MS4s and sanitary sewer systems should be inspected periodically and maintained properly to keep them in good repair.

**PREVENTING AND RESPONDING TO ILLEGAL DUMPING**

It is often difficult to identify and locate the individual(s) responsible for illegal dumping; therefore, a program to address illegal dumping should focus on education and prevention, backed up by enforcement to the extent possible.

The following key strategies can be used to prevent illegal dumping:

* **Site maintenance and controls.** Measures should be taken to clean up areas where illegal dumping has taken place, and controls such as signs or access restrictions should be used, as appropriate, to prevent further dumping.
* **Community outreach and involvement.** Outreach is the linchpin of an illegal-dumping prevention program and can include the following components:
  + Educating businesses, City, municipal and special district employees, and the general public about the environmental and legal consequences of illegally disposing of waste into the MS4.
  + Providing and publicizing ways for citizens to properly dispose of waste.
  + Providing opportunities for citizens to get involved in preventing and reporting illegal dumping.
    - **Targeted enforcement.** This strategy includes City prohibition against illegal dumping backed up by trained law-enforcement personnel and possibly field operations.
    - **Program measurement.** Tracking and evaluation methods will be used to measure the impact of illegal-dumping prevention efforts and determine whether goals are being met.

Some specific methods that the City can use to implement these strategies include the following:

* **Site maintenance and controls**
  + Storm-drain stenciling program.
  + Spill-response plans for hazardous-waste spills.
    - **Community outreach and involvement**
      * The Stormwater Hotline “One Call, That’s ALL!, 720-874-ROAD.
      * Outreach to business sectors that handle hazardous materials and/or have a history of illegal-dumping problems; outreach should include information on BMPs for spill prevention and proper waste disposal.
      * Printed outreach materials for the public.
      * Publicizing of waste-disposal options, such as used oil recycling and household hazardous waste collections.
    - **Targeted enforcement**
  + An illegal-dumping regulatory mechanism.
  + Surveillance of known illegal-dumping locations.
  + Business facility inspections.
  + Training of City employees, Sheriff’s Office members, and other local entities to be on the lookout.
    - **Program measurement**
  + Tracking of incident locations.
  + Compilation of statistics (e.g., annual cleanup costs, facility compliance, arrests, convictions, fines, complaints).

**REFERENCES: CHAPTER 9**

California Coastal Commission. 2002. *Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities.* http://www.coastal.ca.gov/la/murp.html

Center for Watershed Protection. *Pollution Prevention Fact Sheet: Illegal Dumping Control.* <http://www.stormwatercenter.net/Pollution_Prevention_Factsheets/IllegalDumpingControl.htm>

North Central Texas Council of Governments. 2002. *Stormwater Management in North Central Texas: Illicit Discharge Detection and Elimination.* <http://www.dfwstormwater.com/Storm-Water.BMPs/illicit.html>

San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. 2001. *Illicit Connection/Illicit Discharge (IC/ID) Detection and Elimination Model Program Guidance.* <http://www.projectcleanwater.org/html/model_programs.html>

USEPA. 1997. *Guidance Manual for Implementing Municipal Stormwater Management Programs – Volume 1: Planning and Administration* (Draft). Office of Wastewater Management and Office of Research and Development. <http://www.epa.gov/npdes/regulations/phase2.pdf>

USEPA. 1999. National Pollution Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Stormwater Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1000), pp. 68722-68851. <http://www.epa.gov/npdes/regulations/phase2.pdf>

USEPA. 2002. Stormwater Phase II Menu of BMPs – *Illicit Discharge Detection and Elimination: Illegal Dumping.* <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/illi_3.cfm>

USEPA. 2002. *Model Ordinances to Protect Local Resources: Illicit Discharges.* <http://www.epa.gov/owow/nps/ordinance/discahrges.htm>

# **CHAPTER 10 - EVALUATION OF THE IDDE PROGRAM**

**INTRODUCTION**

The WQCD recommends that the IDDE Manual include procedures for program evaluation and assessment. Program evaluation is the time to step back, look at what has been done, determine what worked and what didn’t, and make adjustments to planned future actions as appropriate in the City. This final component of the City’s IDDE Manual outlines how the City will go about evaluating its IDDE Program.

**EVALUATION STRATEGY**

Evaluation procedures will include documentation of actions taken to locate and eliminate illicit discharges. Such documentation will include numbers of outfalls screened, complaints taken and investigated feet of storm sewers videotaped (if any), numbers of discharges eliminated, and number of dye or smoke tests conducted (if any). Note that this component of the IDDE Manual fits in with the overall Phase II requirements for identifying measurable goals for each BMP and reporting on progress toward achieving those goals. Annual reports are necessary during the first permit term.

Determining the impact of these actions is more of a challenge, but it is an important part of the overall process because the WQCD allows for adjustments to the stormwater management program over the life of the permit. Assessment of what worked and what didn’t provides the information needed to make these adjustments to the County’s IDDE Program.

Some steps for assessing the effectiveness of the City’s IDDE strategies include:

* Evaluate the number of possible illicit discharges that were detected using different detection methods, to help determine which detection methods are most effective.
* Evaluate the number of discharges and/or quantity of discharges eliminated using different possible enforcement and compliance measures.
* Program evaluation will also include procedures for considering efficiency and feasibility. Questions to answer include:
  + How much staff time and expense did it take to achieve a given result?
  + Were practical difficulties encountered with this approach? What were they, and how much of a problem did they present?

The strategies listed above are only suggestions. Because the City is allowed a great deal of flexibility in determining what procedures it will use for program evaluation and assessment, the procedures that will be most helpful in providing the information needed to move forward with the IDDE Program will be decided as the Program develops.

**REFERENCES: CHAPTER 10**

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Stormwater Discharges; Final Rule. *Federal Register* vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. <http://www.epa.gov/npdes/regulations/phase2.pdf>

USEPA. 2000. EPA Stormwater Phase II Final Rule Fact Sheet 2.9: *Permitting and Reporting: the Process and Requirements.* EPA 833-F-011. January 2000. <http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm>

USEPA New England. 2002. *NPDES General Permit for Stormwater Discharges from Regulated Small Municipal Separate Storm Sewer Systems (MS4s)* (Draft). Setpember 27, 2002. <http://www.eppa.gov/regiona01/npdes/ms4.html>

# **CHAPTER 11 - RESOURCES**

**WEB SITES AND PUBLICATIONS**

**Key Information Available on the EPA’s Stormwater Web Site**

**Entry Point and General Information**

[*http://www.epa.gov/npdes*](http://www.epa.gov/npdes)

**→** click on “Stormwater”

**→** click on “Municipal Separate Storm Sewer Systems” or “Phase II”

**Stormwater Phase II Final Rule**

[*http://www.epa.gov/npdes/regualtions/phase2.pdf*](http://www.epa.gov/npdes/regualtions/phase2.pdf)

IDDE section of the Phase II Final Rule: see section II(H)(3)(b)(iii), pp.68756-68758

**EPA’s Fact Sheet Series**

[*http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm*](http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm)

**Overview**

1. *Stormwater Phase II Final Rule: An Overview*

**Small MS4 Program**

1. *Small MS4 Stormwater Program Overview*
   1. *Who’s Covered? Designation and Waivers of Small Regulated MS4s*
   2. *Urbanized Areas: Definition and Description*

Minimum Control Measures

* 1. *Public Education and Outreach*
  2. *Public Participation/Involvement*
  3. *Illicit Discharge Detection and Elimination*
  4. *Construction Site Runoff Control*
  5. *Post-Construction Runoff Control*
  6. *Pollution Prevention/Good Housekeeping*
  7. *Permitting and Reporting: The Process and Requirements*
  8. *Federal and State-Operated MS4s: Program Implementation*

**Construction Program**

1. *Construction Program Overview*
   1. *Construction Rainfall Erosivity Waiver*

**Industrial “No Exposure”**

1. *Conditional No Exposure Exclusion for Industrial Activity*

**Documents**

*Stormwater Phase II Compliance Assistance Guide*

[*http://www.epa.gov/npdes/pubs/comguide.pdf*](http://www.epa.gov/npdes/pubs/comguide.pdf)

*National Menu of BMPs for Stormwater Phase II*

[*http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm*](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm)

*Measurable Goals Guidance for Phase II Small MS4s*

[*http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm*](http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm)

**Stormwater Web Sites**

**The Rouge River National West Weather Demonstration Project**

[*http://www.rougeriver.com*](http://www.rougeriver.com)

(See specific information on IDDE at[*http://www.rougeriver.com/techtop/illicit/overview.html*](http://www.rougeriver.com/techtop/illicit/overview.html))

**Center for Watershed Protection’s Stormwater Manager’s Resource Center**

[*http://www.stormwatercenter.net*](http://www.stormwatercenter.net)

**The University of Tennessee’s Municipal Technical Advisory Service NPDES Phase II Stormwater Management BMP Toolkit**

[*http://www.mtas.utk.edu/bmptoolkit.htm*](http://www.mtas.utk.edu/bmptoolkit.htm)

The Illicit discharge section provides a number of useful web links and downloadable PDFs.

**Organization Web Sites**

**Colorado Department of Public Health and Environment – Nonpoint Source Program**

[*http://cdphe.state.co.us/wq/nps/npshom.asp*](http://cdphe.state.co.us/wq/nps/npshom.asp)

**Water Environment Federation**

[*http://www.wef.org*](http://www.wef.org)

**American Public Works Association**

[*http://www.apwa.net*](http://www.apwa.net)

**Local Government Environmental Assistance Network**

[*http://www.lgean.org*](http://www.lgean.org)

**Center for Watershed Protection**

[*http://www.cwp.org*](http://www.cwp.org)

**The Boston Water and Sewer Commission**

(the web site includes the BWSC’s regulations, outreach information, and other useful items)

[*http://www.bwsc.org*](http://www.bwsc.org)

**Stormwater Manuals**

California Coastal Commission. 2002. *Model Urban Runoff Program: a How-To Guide for Developing Urban Runoff Programs for Small Municipalities.* [*http://www.coastal.ca.gov/la/murp.html*](http://www.coastal.ca.gov/la/murp.html)

Colorado Department of Public Health and Environment, Water Quality Control Division. October 2001. *Colorado’s Phase II Municipal Guidance: A guide to application requirements and program development for coverage under Colorado’s Phase II municipal stormwater discharge permit.* [*http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html*](http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html)

**IDDE Manuals**

San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. 2001. *Illicit Connection/Illicit Discharge (IC/ID) Detection and Elimination Model Program Guidance*. [*http://www.projectcleanwater.org/html/model\_programs.html*](http://www.projectcleanwater.org/html/model_programs.html)

Pitt, R., M. Lalor, R. Field, D.D. Adrian, and D. Barbe. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User’s Guide.* USEPA Office of Research and Development. EPA/600/r-92/238. (Available on the Web via EPA’s National Environmental Publications Information System, [*http://www.epa.gov/clariton*](http://www.epa.gov/clariton)*)*

North Central Texas Council of Governments. 2002. *Stormwater Management in North Central Texas: Illicit Discharge Detection and Elimination.* [*http://www.dfwstormwater.com/Storm\_Water\_BMPs/illicit.html*](http://www.dfwstormwater.com/Storm_Water_BMPs/illicit.html)

**Information on Specific Topics**

**Ordinances**

*USEPA’s Model Ordinances to Protect Local Resources: Illicit Discharges.*

[*http://www.epa.gov/owow/nps/ordinance/discharges.htm*](http://www.epa.gov/owow/nps/ordinance/discharges.htm)

(The same information can be found at[*http://www.stormwatercenter.net*](http://www.stormwatercenter.net))

**Optical Brighteners**

Sargent, D. and W. Castonguay. 1998. *An Optical Brightener Handbook.*  Available at: [*http://www.mvpc.org/services\_sec/mass\_bays/optical\_handbook.htm*](http://www.mvpc.org/services_sec/mass_bays/optical_handbook.htm) and [*http://www.naturecompass.org/8tb/sampling/*](http://www.naturecompass.org/8tb/sampling/)

**Dye Testing**

NORLAB, Inc., Amherst, OH 1-800-247-9422. [*http://www.norlabdyes.com*](http://www.norlabdyes.com)

**Smoke Testing**

Smoke testing equipment supplier used by a reviewer of this manual: Hurco Technologies, Inc., 1-800-888-1436; [*http://www.hurcotech.com*](http://www.hurcotech.com)

**Outfall/Manhole Surveys**

Massachusetts Division of Fisheries, Wildlife, and Environmental Law Enforcement. Storm Drain Mapping Project Field Manual (Draft). January 2002. [*http://www.state.ma.us/dfwele/River/pdf/rivstormdrainmanual.pdf*](http://www.state.ma.us/dfwele/River/pdf/rivstormdrainmanual.pdf)

Jewell, C. 2001. A Systematic Methodology for Identification and Remediation of Illegal Connections. Presented at the Water Environment Federation Specialty Conference *2001 A Collection Systems Odyssey: Combining West Weather and O&M Solutions.* (Available for purchase via the WEF Web Site*,* [*http://www.wef.org*](http://www.wef.org))

**Storm-Drain Stenciling**

Earthwater Stencils, an organization that does storm drain stenciling: [*http://www.earthwater-stencils.com/*](http://www.earthwater-stencils.com/)

The Ocean Conservancy’s Storm Drain Sentries program has a goal of having volunteers stencil on million storm drains with educational pollution prevention messages. The Ocean Conservancy supplies volunteers with a fact sheet about nonpoint source pollution, tips on conducting a stenciling project, and stencils for volunteer organizations to use. In return, stenciling project leaders area asked to submit data about the number of storm drains they stenciled, the types of pollutants found near the storm drains, and potential pollutant sources. This information is added to a growing database maintained by the Ocean Conservancy. Contact the Ocean Conservancy’s Office of Pollution Prevention and Monitoring at 757-496-0920 or [*stormdrain@oceanconservancyva.org*](mailto:stormdrain@oceanconservancyva.org)*.* [*http://www.oceanconservancy.org/dynamic/getInvolved/events/sentries/sentries.htm*](http://www.oceanconservancy.org/dynamic/getInvolved/events/sentries/sentries.htm)

**Outreach Materials**

EPA has prepared educational materials on different water topics each month as part of the year-long celebration of the 30th anniversary of the Clean Water Act. April 2003 was Stormwater Month. The public education kit includes:

* General Stormwater Awareness brochure
* Homeowner Guide (car washing, vehicle fluids changing, lawn & garden care, pet waste, septic system management)
* Small Construction Guide poster
* Press release
* Public service announcement for the radio
* Stickers
* Door hanger with illicit discharge message
* PowerPoint presentation

These items are available for download or order on EPA’s Year of Clean Water Web site, [*http://www.epa.gov/water/yearofcleanwater/month.html*](http://www.epa.gov/water/yearofcleanwater/month.html)*.*