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**CITY OF TROY, MO**

**ILLICIT DISCHARGE DETECTION AND ELIMINATION PLAN**

**0233713.01**

**City of Troy, MO**

July 2022

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# Introduction

The Environmental Protection Agency (EPA) regulates the discharge of stormwater runoff into local water bodies through Municipal Separate Storm Sewer Systems (MS4s) that are located in one of a few urbanized area categories. The State of Missouri has delegated authority for the administration of this program, and the City of Troy is required to obtain a Missouri State Operating Permit (Permit) for stormwater discharges in the urbanized area of the City of Troy from the Missouri Department of Natural Resources (DNR). Under the Permit, the City is authorized to discharge stormwater per their Stormwater Management Plan (SWMP), which is developed to reduce the contamination of stormwater runoff discharging from the MS4. In accordance with the Permit, the SWMP consists of six components called *minimum control measures* which, when implemented, will result in a reduction of pollutants discharging into receiving waters. The minimum control measures are:

1. Public Education and Outreach on Stormwater Impacts;
2. Public Participation;
3. Illicit Discharge Detection and Elimination (IDDE);
4. Construction Site Stormwater Runoff Control;
5. Post-Construction Stormwater Management in New Development and Redevelopment; and
6. Pollution Prevention/Good Housekeeping for Municipal Operations.

The Illicit Discharge Detection and Elimination (IDDE) Plan described herein will satisfy requirements of the third minimum control measure in regards to documentation of the program and procedures necessary to identify and eliminate illicit discharges**.**

## Plan Applicability

The Permit is applicable to the MS4 within the municipal corporate limits of the City of Troy, because the population within the City of Troy is greater than 10,000 people, and it has a population density greater than 1,000 people per square mile. According to the 2010 census, the population density for Troy was 1,444 people per square mile. Therefore, per Part 1.1.B of the Permit, this IDDE Plan is to be implemented within the municipal limits of the City of Troy.

## What is an Illicit Discharge?

The EPA defines an illicit discharge as “any discharge to an MS4 that is not composed entirely of stormwater”; exceptions are non-stormwater discharges considered allowable by the Permit**.** The Permit authorizes the following non-stormwater discharges, provided they do not contribute to a violation of water quality standards as determined by the DNR:

* Water line flushing;
* Landscape irrigation and lawn watering;
* Diverted stream flows;
* Rising ground waters and springs;
* Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(b)(20));
* Discharges from potable water sources;
* Foundation or footing drains;
* Air conditioning condensation;
* Irrigation water;
* Water from crawl space pumps;
* Individual residential car washing;
* Flows from riparian habitat and wetlands;
* Street and sidewalk wash water, water used to control dust, that does not use detergents;
* Dechlorinated and uncontaminated residential swimming pool discharges; and
* Discharges or flows from emergency firefighting activities. Fire-fighting activities do not include washing of trucks, run-off water from training activities, and similar activities.

Examples of allowable non-stormwater discharges include water line flushing, uncontaminated pumped groundwater, and uncontaminated flows from footing drains.

Figure ‑: Allowable Non-Stormwater Discharges

Illicit discharges can enter the drainage system via direct connections or indirect discharges, which are defined as follows:

* A *direct* connection is any non-stormwater pipe connected to the storm drain system, such as pipe from a washing machine or floor drain, or a sewer service connection from a house. Often, these types of discharges are continuous.
* An *indirect* discharge may come from a wide variety of sources, such as sanitary sewer overflows, infiltration into the drainage system from failed septic systems, or hazardous waste spills into an MS4. Grass clippings, leaf litter, and other solid material dumped or otherwise deposited in the storm drain system are also considered indirect illicit discharges. These are commonly referred to as intermittent or transitory discharges.

## Why Does an Illicit Discharge Matter?

Illicit discharges are not permitted under the Permit and local regulations and can result in violations and fines for MS4 operators. Additionally, illicit discharges contribute elevated levels of pollutants to surface water bodies and can also contaminate groundwater. When these pollutants enter water bodies, they hinder recreational activities, threaten public health and harm wildlife habitats.

## What Do the EPA and Missouri DNR Require Municipalities to do to Detect and Eliminate Illicit Discharges?

In accordance with the Permit, the City must develop, implement, and enforce a program to detect and eliminate illicit discharges. The Permit for the City of Troy was issued on November 8, 2021.This permit will start the next five-year Permit cycle (2022-2026). Under the new Permit, the City is required to:

* Continue to enforce its *Stormwater Pollution and Control* Ordinance;
* Refine its infrastructure data and revise the stormwater drainage map accordingly;
* Implement a dry weather outfall inspection program and;
* Remove any identified illicit discharges.

## Purpose of this Plan

The purpose of this IDDE Plan is to establish a proactive, strategic, written program to address illicit discharges to the MS4 or to waters of the state within the City of Troy in accordance with the requirements of the 2021 MS4 General Permit.

The IDDE Plan contained herein builds upon the City’s IDDE activities conducted under the 2013 Permit and incorporates an approach to address the 2021 permit requirements. The Proposed Plan will have a five-year implementation period, to begin in conjunction with the 2021 Permit.

This Plan is intended to assist the City of Troy in implementing the IDDE Program in a prioritized and strategic way to find and eliminate illicit discharges. The Plan is to be used as a guide for IDDE activities and can also be used as a training tool for City employees.

## Employee Training

Employee training is an important component of Troy’s IDDE Program and complies with Part 4.3.Q of the Permit. Municipal employees will be trained in various stormwater management issues throughout the Permit term. It is important that the City employees involved with the IDDE Program be able to recognize and identify illicit discharges.

|  |  |  |
| --- | --- | --- |
| **ACTION ITEM: Annual Employee Training** | | |
| 1. | Include IDDE Topics in Annual Training | City employees responsible for implementing the IDDE Plan, in addition to those that spend time doing site visits and inspections, will be trained to identify illicit discharges annually. See Training Materials in Appendix E. |
| 2. | IDDE Training Documentation | The training dates, topics, and the attendance will be recorded. |

## IDDE Program review

Pursuant to Parts 4.3.N and 4.3.R of the Permit, the IDDE Program must be reviewed annually, and implementation procedures must be updated as necessary. If an issue arises that was not handled properly, the program review will consider that incident in light of program effectiveness.

|  |  |  |
| --- | --- | --- |
| **ACTION ITEM: IDDE Program Review** | | |
| 1. | Review IDDE Program | The MS4 Operator/Stormwater Coordinator must review the IDDE Program annually. |
| 2. | Update IDDE Program | The MS4 Operator/Stormwater Coordinator shall update implementation procedures to evaluate the effectiveness of each BMP within this program. Updates shall be submitted as necessary |

# Illicit Discharge Detection and Elimination Authority

## Regulatory Mechanism

The City of Troy has developed a Stormwater Pollution and Control Ordinance. The Ordinance has been effective since January 24, 2019. This ordinance is located under Title II Public Health, Safety and Welfare, Chapter 250. Additionally, the City maintains compliance with the State Plumbing Code regarding plumbing connections, and citizens are required to meet Troy’s Sewer System Ordinance for sanitary sewer connections.

Troy’s Stormwater Pollution and Control Ordinance includes language expressly prohibiting illicit discharges to the City’s stormwater drainage system. Appendix A includes a copy of the City’s *Stormwater Pollution and Control* Ordinance. This Ordinance complies with Part 4.3.C of the Permit. In addition, the enforcement section within the Ordinance complies with Part 4.3.K.

## Responsible Parties

The City’s Stormwater Coordinator is designated to administer, implement, and enforce this Ordinance. The Stormwater Coordinator position is within the Building Department for the City of Troy. The Stormwater Coordinator is the manager of the IDDE program with primary support and collaboration from the Building Department and Department of Public Works. The general departmental responsibilities integral to implementation of the IDDE Program are listed in Table 2‑1 below.

Table ‑: Responsible Parties for Implementing IDDE Program

|  |  |
| --- | --- |
| **Primary Responsible Party** | **Responsibilities** |
| Department of Public Works | * Coordinates with Stormwater Coordinator to abate illicit discharges of City owned infrastructure |
| Building Department | * Administers Illicit Discharge program * Conducts investigations, screening, and sampling * Conducts opportunistic inspections of MS4 infrastructure * Conducts MS4 repairs or arranges for contractor to conduct MS4 repairs * Conducts training * Compiles annual documentation * Reviews screening results and public complaints |

# Storm Sewer System Map

The City has completed preliminary mapping of outfalls. Other stormwater drainage infrastructure will be updated in the City’s Geographic Information System (GIS) to reflect new information received as a result of dry weather inspections, the results of condition evaluations and will include infrastructure attribute information (e.g. pipe size, pipe type, etc.), where possible. Pursuant to the Permit, Part 4.3.B, the permittee is required to record the source of information used for the map. Source of information on MS4 system components will be recorded within the City’s MS4 geodatabase, as well as the dates of inspection and addition of new outfalls. The storm sewer system map shown in Appendix B also includes the City “grids” and other pertinent information discussed in the Section 5.

|  |  |  |
| --- | --- | --- |
| **ACTION ITEM: MS4 Mapping and Tracking** | | |
| 1. | Update MS4 map (as needed) | Throughout the Permit term, continue to update and improve the map to reflect attribute information, corrections or modifications, and progress made. |
| 2. | Track minimum information required by the MS4 Permit | A numbering system or naming system for all outfalls |
| Dates outfall locations were verified or last time the outfalls were surveyed in the field. |
| Newly added outfalls shall include the date that they were added to the storm sewer system. |

# Assessment and Priority Area

## IDDE Program Priority Area

Part 4.3.D of the Permit requires the City to identify a priority area. Part IV of the permit states, “When considering where priority areas are, look at land use on the watershed. Priority areas may be industrial areas, areas with a concentration of food establishments with grease disposal, or parts of the city with older infrastructure which may have cross contamination from aged domestic sewers, or an area of retail where litter may be an issue. The MS4 Operator should consider all types of pollutants when determining priority areas.”

Consistent with Parts 4.3.D and 4.3.H of the Permit, the City has developed the following priority area which will be inspected annually until the outfalls in the area are no longer a significant potential source for illicit discharges. In Troy, the IDDE priority area was developed based on historical local knowledge. The area was chosen because it is downstream of older areas including restaurants. In addition, the outfalls discharge into a stream near a park within residential development, increasing the possibility of recreational use. The priority area is bounded by Court St. to the West, Annie Ave. to the North, John St. to the East, and Locust St. to the South. See .

Diagram, engineering drawing

Description automatically generatedFigure ‑: Priority Area

For full storm sewer outfall mapping, the City will use the same grids used to delineate sewer system areas to map and track outfall investigations. These have been printed as a map series and are included in Appendix C.

|  |  |  |
| --- | --- | --- |
| **ACTION ITEMS: Priority Area Determination** | | |
| 1. | Identify Priority Area | Based on discussion with the City and historical local knowledge of suspected problem areas. |
| 2. | Document Priority Area | Document priority areas via GIS map, written description or other. |
| 3. | Review Priority Areas | Annually review the priority areas to determine if updates are needed. |

## SOP for Opportunistic Inspections

The City currently has staff that perform maintenance activities in Public Works, Parks & Recreation, Building, Wastewater Treatment, and other departments that place staff outside, possibly near the MS4 system. These activities allow trained staff to opportunistically identify possible illicit connections. Sewer system evaluations also provide an opportunity to detect potential illicit connections. When sewer system evaluations are performed, data will be provided to the Stormwater Coordinator for incorporation into IDDE inspection.

| **ACTION ITEM: City Staff Perform Opportunistic Inspections** | | |
| --- | --- | --- |
| 1. | Detect possible illicit discharges | Opportunistic inspections will be conducted by City staff to detect illicit discharges. City staff who may notice an illicit discharge are trained to notify the Stormwater Coordinator. See Appendix E for Training Materials.  Sewer or septic malfunctions, which are reported to and investigated by the City, may also lead to the discovery of illicit discharges. Illicit discharges will continue to be investigated and documented as part of the sewer or septic malfunction reporting process. |

# Screening and Sampling PROCEDURES

The City’s primary method for detecting illicit discharges will be through outfall inspection (i.e. visual screening and targeted sampling). For the purposes of this Plan, the term outfall may also refer to locations that discharge into neighboring communities or into adjacent MS4s and are called interconnections. Priority outfall and interconnection inspections consist of visual screening and targeted sampling.

## Dry Weather Outfall Inspection Program

Outfalls will be inspected during dry weather conditions (a minimum of 72 hours after the last precipitation event). Base flow in storm drain systems is common and can be present at any time of year due to shallow groundwater infiltration; therefore, it is essential to conduct dry weather outfall and interconnection screening investigations during periods when groundwater infiltration is minimal. Coordination with the Troy Department of Public Works - Water and Wastewater personnel is recommended to confirm that dry weather flows present are not the result of hydrant flushing.

In general, outfalls/interconnections will be screened and sampled during dry weather for the presence or absence of flow from the MS4 infrastructure. Screening includes a rapid visual and olfactory inspection consistent with Chapter 11 of the Center for Watershed Protection’s *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments* (2004)[[1]](#footnote-1). Field sampling for indicators of illicit discharges will be conducted as needed and consistent with procedures outlined below. Samples will be collected for laboratory analysis as necessary.

### Outfall/Interconnection Screening Information Collection

The information, as outlined in Appendix B, will be collected at each outfall or interconnection. This information will be recorded on a field sheet or field tablet and maintained in a file folder for incorporation into the IDDE Program. Recording the information in the field sheet and being maintained in the database along with enforcement tracking will comply with Part 4.3.L.1. within the Permit. As resources allow, field screening information will be added to the mapping for identification of future priority areas.

Dry weather base flow samples will be collected for analysis and diagnostic of illicit discharges, as needed. If flow is not observed during screening, the non-flowing condition is noted on the Outfall Inspection Form and no sample is collected.

### Inaccessible Outfalls

Where outfalls or interconnections are inaccessible or submerged, the City will proceed to the next accessible upstream manhole or other MS4 structure to observe the condition of the MS4. This upstream location will be assigned a unique identifier and linked to the screening and/or sampling results obtained at that location.

### Sample Collection

The City will verify weather conditions prior to planning sampling events to determine whether the dry weather criteria have been met and prepare the equipment listed in , as applicable, for field use. In some cases, use of sampling pole may be warranted to collect samples from outfall or interconnection discharge points that are difficult or potentially unsafe to sample conventionally. If the City uses a sampling pole to collect samples, field personnel will check surroundings to verify that there are no obstructions or obstacles to sample pole use. The sample pole will not be extended vertically overhead. Care will be taken to extend the sampling pole only to the extent necessary, and that all parts of the sampling pole are functioning properly prior to sample collection.

For the sample to be representative of outfall or interconnection discharge, it must be collected prior to reaching the receiving water. The sample container provided with the sample pole will be used to collect and transfer the stormwater sample into either a field screening container or a laboratory supplied container immediately upon collection. Once a sample has been collected, the sampling container will be decontaminated using a triple rinse of distilled water and/or a distilled water/non-detergent based cleaner. Cleaners with detergent or chlorine will not be used for decontamination, as they contain constituents that may skew field screening results for chloride or surfactants.

Figure ‑: Field and Laboratory Sample Collection Workflow

Field Instrument or Kit Samples

Collect supplies and equipment to bring into the field

Prepare field sampling sheet and/or verify tablet is operational and contains all required information

Set up a sample analysis table or other stable work surface to operate field instrument/kit

Put on clean nitrile gloves

Use a pre-cleaned bottle to collect discharge from the outfall/interconnection (do not use chlorine or detergent cleaners)

Dispose of sampling derived waste

Segregate sampling derived waste into appropriate container by waste stream for appropriate disposal

Perform instrument/kit analysis according to manufacturer's instructions

Record field instrument/kit readings on sampling sheet or tablet

Laboratory Analysis Samples

Contact the laboratory to arrange for a bottle drop off and sample pickup (cooler, bottleware, chain of custody, labels)

Prepare field sampling sheet and/or verify field tablet is operational and contains all required information prior to going in the field

Prepare cooler for sample collection (purchase ice)

Fill out the laboratory provided chain of custody to the extent possible before collecting the sample

Use the laboratory provided bottle to collect discharge from the outfall/interconnection

Record sample results upon receipt from laboratory

Contact the laboratory to arrange for sample pickup. Note bacteria samples MUST be analyzed within 24 hours of collection

Label the container with required information and place the sample in the cooler, on ice

Record relevant information on the   
chain of custody

Put on clean nitrile gloves prior to handling sample bottles

Table ‑: Sampling Equipment Supplies for Field and Laboratory Sample Analysis

| **Sampling Equipment** | **Purpose/Notes** |
| --- | --- |
| Graduated cylinder/beaker/similar clean container | * Hold water samples being tested via field instrument/kit |
| Lab sample containers, labels, chain of custody forms | * Containers for collection of bacteria samples to be submitted to the laboratory * Containers must be supplied by the laboratory, clean, and not previously used * Labels should be completed and affixed to the appropriate container upon sample collection to avoid mislabeling of multiple samples |
| Sharpie®, “Rite in the Rain” pen and paper | * Use a Sharpie® to writer on laboratory labels * Use “Rite in the Rain” pens and paper to record screening/sampling information if not using a field tablet |
| Cooler with ice | * For transporting sample bottles to laboratory |
| Extension pole sampler | * To be used to obtain samples from hard to reach locations |
| Inspection forms or field tablet | * To record screening/sampling information |
| Clipboard | * Organize and hold field sheets, use as a writing surface |
| Pry bar / pick / mallet or hammer | * Manhole/catch basin removal * Other suitable tools may be used in lieu of pry bar/pick * Mallet or hammer to be used to assist opening stuck manholes or catch basins |
| Utility knife | * Multiple uses |
| Mobile table, or flat working station | * For field equipment / sample organization / note taking surface * Tailgate or cooler surface may be sufficient – plan according to specific needs of field personnel conducting work |
| Flashlight or headlamp | * To be used to view dark sampling locations, such as inside manholes |
| Distilled water, spray bottle, hand sanitizer | * For use to sanitize/disinfect sampling equipment between sample locations (note Alconox is only suitable for bacteria sample equipment decontamination and may cross contaminate surfactant samples) * Hand sanitizer for personal use only, not to be used on equipment |
| Personal protective equipment: Safety glasses, safety vest or shirt, steel-toed boots, nitrile gloves, and any other City safety requirements | * Make sure personal protective equipment is in good condition, suitable for field work |
| Biological protection: Sunscreen, insect repellent, permethrin (for ticks), poison ivy skin cleaner | * Consider the sample location and select biological protection, as necessary |
| Paper towels / garbage bags / closed waste containers such as Nalgene® bottles | * Store testing derived waste with special disposal considerations in Nalgene® bottles, taking care not to mix waste streams |
| Traffic safety cones | * To be used in areas where the sampling point is exposed to vehicle traffic |
| GPS | * For recording location of outfalls/interconnections, if not already recorded in City of Troy GIS system |
| Test kits | * For sample analysis |
| Waders or waterproof boots | * For sampling in wet environments |

### Sample Analysis - Field Test Kits and Instrumentation

Field test kits may be used to conduct screening related activities for the parameters listed in Table 5‑2, except for E. coli. This Plan has been written for maximum flexibility of use of field kits and instrumentation, based on field observations and kit/instrumentation performance.

### Sample Analysis - Laboratory Submittal

Bacteria samples are collected in clean, unpreserved laboratory supplied bottles, placed in a cooler on ice, **and must be transported to the analytical laboratory within 6 hours of collection for analysis within 24 hours**.

### Interpretation of Results

Once samples are collected and either screened in the field or analyzed by a laboratory, results will be evaluated against possible sanitary wastewater identification thresholds as outlined below. It should be noted that these thresholds are only general guidance, and that sanitary wastewater may or may not be present if concentrations exceed these thresholds.

Table ‑: Sanitary Wastewater Identification Thresholds

| **Parameter** | **Identification Thresholds** | **Instrumentation** |
| --- | --- | --- |
| Ammonia | > 0.5 mg/L | CHEMetrics K-1510 Field Kit |
| Surfactants | ≥0.25 mg/L | CHEMetrics K-9400 Field Kit |
| Total Chlorine | > 0.02 mg/L | Hach Chlorine Pocket Colorimeter |
| *E. coli* | > 1000 cfu/100 mL | Laboratory Submittal |

Screening and sampling results will be documented. If sanitary wastewater or other illicit discharges are identified in an outfall, further investigation may be needed and as described in Section .

In some cases, sample results can be interpreted to distinguish between sewage and wash water flows, which are two common illicit discharges. A process used to determine potential sources of illicit discharges based on screening or sample results is provided in .

Figure ‑: Illicit Discharge Identification Flow Chart

Possible Sanitary Wastewater Contamination

Possible Washwater Contamination

Likely Natural Water Source

Likely Tap and/or Irrigation Water Source

Start

Surfactants ≥0.25 mgL

**Yes**

Chlorine >0.02 mg/L or Method Detection Limit

**No**

**No**

**Yes**

**No**

Ammonia

>0.5 mg/L

**Yes**

Adapted from Chapter 12 of the Center for Watershed Protection’s Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004): Figure 47, pg. 131.

| **ACTION ITEM: Implement Screening and/or Sampling Procedures** | | |
| --- | --- | --- |
| 1. | Conduct dry weather screening of outfalls/interconnections annually for priority outfalls and complete 60% of all outfalls during permit term | If flow is observed during dry weather, and there are visual or olfactory indicators of illicit discharges, sampling for the following parameters may be necessary to determine possibility for illicit discharges:   * Ammonia * Chlorine * Surfactants * Temperature   Collect samples for laboratory submittal for:   * E. coli or fecal coliform |
| 2. | Sampling Follow-Up for Priority Area | At least once per permit cycle, mapping and screening of outfalls with detected illicit discharges will be used to evaluate priority area and determine revised priority area. |

# Illicit Discharge Investigation

## Identifying the Source of Illicit Discharges

When a potential illicit discharge is identified (whether during visual dry weather inspections, during routine work, during opportunistic inspection of other infrastructure or through other methods) the City will complete investigations in order to identify the source(s) of discharge, which may include the methodology and procedures outlined below.

### Investigation Timelines

Per Permit Part 4.3.J, all illicit discharges, including spills, which are determined to constitute a threat to human health, welfare or to the environment will be immediately responded to. Complaints, reports or monitoring information that indicate a potential illicit discharge not constituting a threat to human health, welfare or to the environment will be investigated within five business days. The investigation of an illicit discharge may also be initiated by a public complaint received via the City’s website or phone.

## Illicit Discharge Investigation Procedure

The potential for an illicit connection is evaluated based on priority areas (Section 4.1 of this plan), and results from dry weather investigations (Section ) that incorporates both olfactory/visual evidence and sampling results. See for an overview of the use of sampling data for identification of potential sources of illicit discharges.

The investigation procedure is initiated by the Stormwater Coordinator and is conducted by trained City staff with the assistance of a third-party subcontractor as needed. The investigation procedure, based on Part 4.3.F, may include, and is not limited to, the following implementation steps:

1. Conduct a preliminary review of drainage system record plans to determine the affiliated drainage structures to be investigated. Once these structures are determined, identify known factors of concern within the outfall drainage area as defined below. The City of Troy has identified the following that, when known, may obligate further dry weather sampling and targeted investigation:

* Repetitive SSOs;
* Common or twin-invert manholes serving both storm and sanitary sewer;
* Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures have resulted in SSOs;
* Sanitary sewer alignments known or suspected to have been constructed with an underdrain system;
* Extensive and documented sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure; and
* Widespread code-required septic system issues (indicative of inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance).

1. Distribute notifications to residents and property owners within the investigation area to inform them of the potential need to gain access to private property to inspect municipal drainage infrastructure, internal plumbing, and/or conduct dye testing.
2. If no stormwater drainage system mapping data available: Conduct field mapping to identify the drainage system leading to the outfall. Begin with outfall and map upstream to the extent practicable. Proceed with step 4.
3. If mapping data available: Conduct field investigations during dry weather only to reduce the effect of stormwater flows on the MS4. Conduct a visual and olfactory inspection of key junction manholes in the drainage area to attempt to identify obvious source(s) of illicit cross-connection, inflow, or infiltration in specific drainage segments. A key junction manhole is a location that allows effective assessment of upstream drainage, usually at intersections of drain line segments. See Section 6.3 for a discussion of key junction manhole investigation procedures. Begin investigation in the upper portion of each catchment working downstream. If visual evidence of a direct illicit discharge is identified (e.g. human waste, toilet paper, other) and the segment of pipe can be isolated, skip to Step 5.

* When flow is observed in a key junction manhole, use field kits to analyze samples for identification parameters: ammonia, chlorine, surfactants, and possibly temperature. Record results. Compare with the identification thresholds and flow chart shown in Table 5-3 and Figure 5-2 to identify the likely source of potential illicit connection(s). Junction manholes with obvious signs of contamination do not need to be sampled.
* When flow is not observed in a junction manhole, partially block each inlet of the manhole using sandbags or other barriers for a forty-eight (48) hour dry period (i.e. when no precipitation or significant snowmelt is expected). Re-inspect the junction manhole after forty-eight (48) hours for intermittent flows, and then sample any captured flow for standard sampling parameters.

1. Once pipe segments or open drain segments exhibiting evidence of illicit discharge have been identified, the City may conduct additional investigations, as needed, to verify the source(s) of pollutants. These investigations can include laboratory water quality testing (e.g. E. coli), wet-weather and/or high groundwater investigation monitoring, CCTV pipe inspections, targeted internal plumbing inspections via lateral tests using dye flushing and/or sanitary sewer collection system dye flooding.
2. When illicit discharge locations are verified in association with a physical address or indirect interconnection with the sanitary sewer, field staff will photograph the problem area at ground level, identify any other indicators of location, summarize likely remedy to the problem as well as sampling results and document this information to the Stormwater Coordinator.
3. The Stormwater Coordinator will then initiate the corrective action process by ordering compliance by the property owner and/or responsible party via a written notice. See Section for discussion of the corrective action process.

|  |  |  |
| --- | --- | --- |
| **ACTION ITEMS: Dry Weather Outfall Inspection** | | |
| 1. | Inspect Priority Areas Annually | City identified priority areas will be inspected annually. |
| 2. | Inspect Outfalls | Inspect 60% of total outfalls within Permit Cycle. |

## Manhole Inspection Methodology

Junction manholes and key junction manholes are defined as the following:

**Junction manhole**: A manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.



Example Junction Manhole

(source: https://fpmccann.co.uk/sites/default/files/Website%20Brochures%20Lo-Res/FP-McCann-Precast-Concrete-Drainage-Brochure%20(2).pdf)

**Key junction manhole**: A junction manhole that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a junction manhole would not affect the City’s ability to determine the possible source of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

The City may investigate key junction manholes using the protocols presented in Section and the following sections.

Figure ‑: Key Junction Manhole Inspection Protocol Flow Chart

Continue to next downstream key junction manhole to determine location of illicit discharge

Investigation complete.  
Document results

**Yes**

Don personal protective equipment (steel toed boots, nitrile gloves, protective eyewear, etc.)

* Secure vicinity of key junction manhole with traffic cones, police detail, etc.
* Open manhole using appropriate tools.

Is Discharge Present?

Is Discharge  
Present?

Take sample of discharge  
for analysis for ammonia, chloride, and surfactants

Observe for other evidence of illicit discharge (odor, discoloration, turbidity, floatables/deposits)

Do sample results exceed  
any thresholds?

**Yes**

**No**

**Yes**

**No**

Are any of  
these indicators present?

# Illicit Discharge Abatement Procedures

Upon confirmation of a verified illicit discharge (via CCTV and/or dye), the Stormwater Coordinator will be notified by the trained field staff and/or contractor. If the illicit discharge is due to City owned infrastructure, then the Stormwater Coordinator will alert the Troy Department of Public Works - Water and Sewer Departments indicating that field staff have verified an illicit discharge. After appropriate notifications, abatement of the illicit discharge will be pursued. Pursuant to Part 4.3.G of the MS4 Permit, abatements can include the implementation of source control or treatment Best Management Practices (BMPs), or remediation or restoration of affected property. The Stormwater Coordinator needs to maintain contact with appropriate environmental cleaning companies, laboratories, and other relevant entities to comply with Part 4.3.G of the Permit.

Connections from private properties are common sources of direct and indirect illicit discharges, and therefore this section is focused on the procedures to follow if the City finds that the property owner is the responsible party. If the City is responsible for removal of the illicit discharge, such as in cases of exfiltration from broken sewer mains, the City will determine if the discharge is a threat to human health, welfare, or the environment. In compliance with Part 4.3.J., of the Permit, if the illicit discharge poses a risk to human health, welfare, or the environment, the City will immediately respond to it, and will abate the discharge as quickly as practicable. The City will prioritize its abatement activities based on flow volume, impacts to human health, etc. If an illicit connection or discharge is observed related to an adjacent MS4 Operator’s municipal storm sewer system, the MS4 Operator must notify the other MS4’s Operator within 24 hours of discovery or as soon as practicable.

The City of Troy does not currently have any exempt facilities, but this section of the IDDE manual will be updated if any are located.

Table ‑: Exempt Facilities

|  |  |  |
| --- | --- | --- |
| **Exempt Facility** | **Alternate Regulation They Are Subject To** | **Enforcement Authority** |
| **n/a** | n/a | n/a |

## Voluntary Compliance

The preferred approach to address illicit discharges is to pursue voluntary compliance from the property owner and/or responsible party using education. Often, business operators and residential property owners are not aware of the existence of illicit connections or activities on their properties that may constitute an illicit discharge. In these cases, providing information about the connection or operation, the environmental consequences, and suggestions on how to remedy the problem may be enough to secure voluntary compliance from the property owner and/or responsible party.

## Operational Problems

Property owners and/or responsible parties are responsible for correcting operational problems that are resulting in illicit discharges to the municipal storm drain system. Operation modifications could include sewer lateral maintenance to repair defects or eliminate blockages, moving vehicle washing activities indoor or undercover, locating an appropriate discharge location for liquid wastes, or other appropriate measures. Through site visits and education, the Enforcement Authority or other program partners may provide technical assistance to aid property owners in identifying and addressing operational problems.

## Structural Problems

Many illicit discharges will require a structural modification to correct the problem. Structural modifications are used to redirect illicit discharges from private properties to a sanitary wastewater collection, on-site disposal system, or other appropriate location. Structural repairs to defective sanitary sewer collection infrastructure may also be necessary. Correcting structural problems is the responsibility of the property owner and/or responsible party, though the Stormwater Coordinator may provide technical assistance during the process.

## Enforcement Actions

When voluntary compliance cannot be obtained, or does not produce the desired result, the Stormwater Coordinator will pursue follow-up enforcement action. A sample Notice of Violation is provided in Appendix G. Table 7‑2 outlines detailed enforcement steps.

### Enforcement Timeline

If property owners are not addressing problems in a timely manner (i.e. within sixty (60) days of verification), this may warrant a more aggressive enforcement approach, if an “imminent and substantial danger” exists. Consistent with the *Stormwater Pollution and Control* ordinance, the City may step in and perform the repairs necessary to remove an illicit connection, eliminate an illicit discharge, and/or clean-up a dumping incident. Property owners will also be responsible for reimbursing the City for any costs incurred in correcting illicit discharge problems.

Table ‑: Enforcement Process

| **Illicit Discharge Elimination Step** | **Details** |
| --- | --- |
| Step 1 –  Initial Actions | * Provide landowner Notice of Violation letter\*. It is recommended that notifications should be given to the landowner in writing within thirty (30) days of verification to remove illicit discharge. * Encourage voluntary compliance. * Set compliance date (determined on individual incident basis). * Provide staff support and/or technical assistance (as applicable). * Request evidence of corrected problem. * Conduct site visit to verify compliance and completion of work. |
| Step 2 –  Follow-up Actions | * Request evidence of corrected problem. * Conduct site visit to verify compliance and completion of work. * If the violation has not been corrected pursuant to the requirements set forth in the notice of violation, or, in the event of an appeal to the authorized enforcement agency, within 30 days of the date of the municipal authority upholding the Stormwater Coordinator's decision, then the Stormwater Coordinator may enter the property to take “any and all measures necessary to abate the violation and/or restore the property”. * For violations with the possibility of further enforcement action, review Chapter 250 Stormwater Pollution and Control Section 250. |
| Step 3 –  Final Actions | * Send final Notice of Violation letter\*. * Prosecutor to commence fines up to $500 per day per violation and/or imprisonment for a period of time not to exceed 90 Day in accordance with the Chapter 250 Stormwater Pollution and Control Section 250.110 Criminal Prosecution Ordinance |

\*Document copies of all letters

## Follow-Up Screening

Within sixty (60) days of the illicit discharge abatement, dry-weather confirmatory sampling should be conducted just “upstream” and “downstream” in nearest manholes to the abated illicit discharge to confirm removal. Field sample collection includes ammonia, chlorine, and surfactants; follow similar procedures for sampling as described in Section 6.2.

## Record Keeping

Throughout the investigation and corrective action activities, all information related to the incident or property in question should be well documented utilizing a series of work orders, email correspondence, and compliance database updates. Records for each verified illicit discharge removed from the City’s MS4 should include:

* Location of discharge and source;
* Description of discharge;
* Method/date of discovery;
* Date of elimination;
* Mitigation action and associated costs; and
* Estimated volume of flow removed.

# References

Center for Watershed Protection and Robert Pitt University of Alabama, 2004. *Illicit Discharge Detection and Elimination: A Guidance Document for Program Development and Technical Assessments*; October. Accessible: https://www3.epa.gov/npdes/pubs/idde\_manualwithappendices.pdf

Missouri State Operating Permit, issued November 1, 2021, Permit No. MOR04C053

Appendix A: Chapter 250 Stormwater Pollution and Control Ordinance

Appendix B: Outfall/Interconnection Inspection Form

Appendix C: Outfall Map

Appendix D: Enforcement Tracking Sheet

Appendix E: Training Module

Appendix F: Notice of Violation Sample

1. See References [↑](#footnote-ref-1)