ILLICIT DISCHARGE DETECTION AND ELIMINATION

A Programmatic Overview of the City of Salem's IDDE Program and Process

June 2014
(Revised August 2016)

For reporting of issues related to pollution into stormwater runoff contact Chuck Van Allman, Jr. (Director, Department of Community Development) at 540-375-3032.

City of Salem
Virginia

EEE Consulting, Inc.

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Acronyms

DEQ	Virginia Department of Environmental Quality
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
ORI	Outfall Reconnaissance Inventory
TMDL	Total Maximum Daily Load
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
City	City of Salem

1.0 INTRODUCTION AND PURPOSE

This manual presents the standard protocol which the City of Salem (City) will utilize to implement its Illicit Discharge Detection and Elimination (IDDE) Program. The manual provides written procedures to detect, identify, and address unauthorized non-stormwater discharges, including illegal dumping, to the City's small municipal separate storm sewer system (MS4). The written procedures are required to be developed, implemented, and updated by the City as a condition of the MS4 General Permit (MS4 Permit). The MS4 Permit authorizes stormwater discharges from MS4s to surface waters and wetlands in urbanized areas of the Commonwealth of Virginia. The permitting mechanism is designed to prevent pollutants from entering water bodies through stormwater runoff.

The MS4 program is part of the National Pollutant Discharge Elimination System (NPDES), which is authorized through the Clean Water Act. With delegation from the Environmental Protection Agency (EPA), MS4 permits in Virginia are issued through the Virginia Pollution Discharge Elimination System (VPDES) and administered by the Virginia Department of Environmental Quality (DEQ). This manual was developed in general accordance with the EPA's, *"Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments."* To ensure compliance with IDDE requirements of the MS4 Permit, the City is required to perform the procedures outlined in this manual.

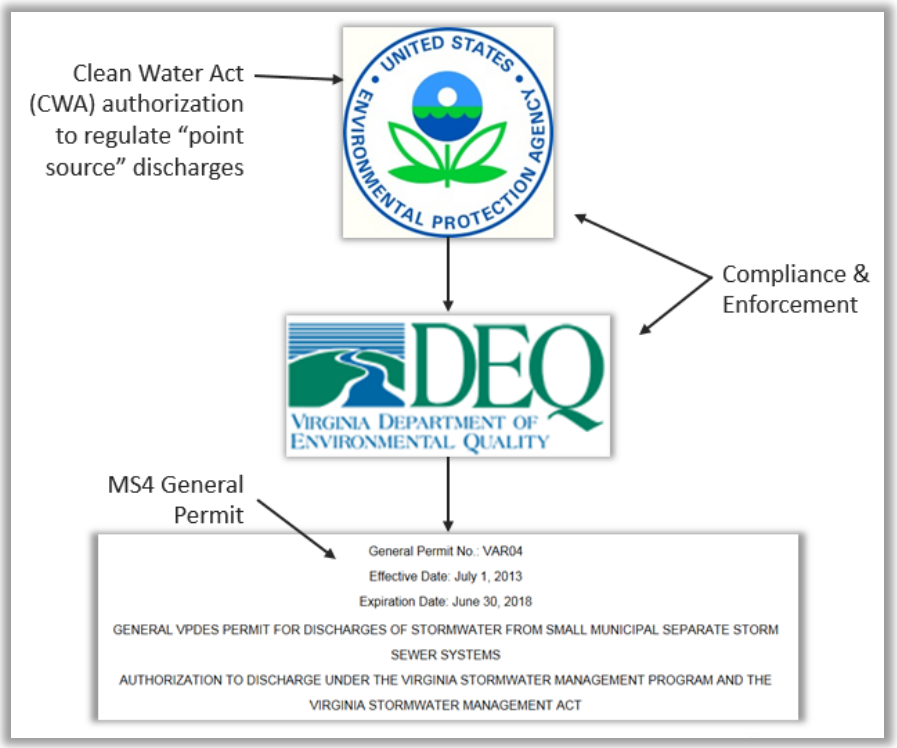

Figure 1. Generalized depiction of the regulatory framework for the MS4 permit.

Salem's IDDE Program includes five distinct components:

- **IDDE Training** – Procedures to train applicable field personnel related to the IDDE Program are discussed in Section 2.0 of this manual.
- **Illicit Discharge Tracking** – Procedures to track and document all efforts related to the IDDE process are outlined in Section 3.0 of this manual.
- **Identification of an Illicit Discharge** – Procedures to screen, identify and report questionable illicit discharges are outlined in Sections 4.0 and 5.0 of this manual.
- **Investigating the source of an Illicit Discharge** – Procedures to investigate questionable illicit discharges that have been reported are outlined in Section 6.0 of this manual.
- **Elimination of an Illicit Discharge** – Procedures to eliminate illicit discharges that have been confirmed through the investigation effort are outlined in Section 7.0 of this manual.

For the City to demonstrate compliance to the conditions of the MS4 Permit, documentation of IDDE activities performed is paramount. Section 7.0 describes the appropriate documentation procedures for activities described in this Manual.

2.0 IDDE TRAINING PROGRAM

The City's MS4 Program Plan requires the City to provide **annual training** to applicable field personnel in recognition and reporting of illicit discharges. As part of the City's Program, this manual serves as the annual training material to meet the permit requirement. Note that training is also required for Good Housekeeping Pollution Prevention practices to applicable employees and the City provides a separate manual as training material for those activities.

The written procedures herein serve as the foundation of a successful IDDE Program and help to achieve MS4 Permit compliance. However, implementation and documentation of the procedures are critical for achieving the IDDE Program **goal to eliminate non-stormwater discharges** to the City's storm sewer system and downstream receiving waters. As referenced throughout this manual, the IDDE Program relies on supplemental materials to assist with implementation and documentation. Field personnel who are identified for IDDE training should be familiar with each Section of this Manual, the City's IDDE Field Guide, and the supplemental materials provided in the Appendices of this Manual, which include:

- **Outfall Reconnaissance Inspection Form** – This form is used for outfall screening to assist in determining the potential of an illicit discharge. The guide is located in Appendix A.
- **IDDE Tracking Form** – Provides a form for the inclusion of documentation required by the MS4 Permit for each investigation conducted of any suspected illicit discharge. This form will be completed by the Director of the Department of Community Development (Director) or designee, but required information may be obtained by field staff to assist with the completion of the form. The form is located in Appendix B.

3.0 DOCUMENTATION

As highlighted throughout this Manual, documentation of illicit discharge reports, investigations, and elimination actions is critical for demonstrating compliance to the MS4 permit. In the case of an illicit discharge, the City's MS4 Permit requires, at a minimum, the following information:

- ✓ The date or dates that the illicit discharge was observed and reported;
- ✓ The results of the investigation;
- ✓ Any follow-up of the investigation;
- ✓ Resolution of the investigation; and
- ✓ The date that the investigation was closed.

The resolution of a discharge may be a referral to and acceptance by the VDEQ or local government for action; however, this action must be properly documented by the City. If the discharge is determined to be a permitted or allowable discharge, then the final action will be documented and the information will be included on the corresponding Salem IDDE Tracking Inventory Form. This will enable the City to access this information if future requests are received concerning the discharge in question. It will also be included in annual reporting.

3.1 Annual Reporting to DEQ

The City must annually report to the DEQ specific information pertaining to its IDDE efforts. The information is included in the MS4 Annual Report due October 1st of each year. Information required for reporting includes:

1) A list of any written notifications of physical interconnection given by the operator to other MS4s;
2) The total number of outfalls screened during the reporting period, the screening results, and detail of any necessary follow-up action;
3) A summary of each investigation conducted by the City regarding suspected illicit discharge. The summary must include:
    a. The date the suspected discharge was observed, reported, or both;
    b. How the investigation was resolved, including any follow-up; and
    c. Resolution of the investigation and the dates the investigation was closed.

4.0 IDENTIFICATION OF AN ILLICIT DISCHARGE

The municipal separate stormwater sewer (MS4) means a conveyance, or system of conveyances, that discharges into surface waters and wetlands. That is, any system of drainages from roads, parking lots, catch basins, curbs, gutters, ditches, man-made channels, or storm drains that direct stormwater into a stream, pond, wetland or other similar feature is part of the MS4 for Salem. These conveyance systems are vulnerable to contamination, and can carry pollutants in stormwater runoff to the receiving waters or wetlands. Substances other than stormwater that enter receiving waters are considered an illicit discharge and are the focus of this Manual.

An illicit discharge can be: 1) a measurable flow from a storm drain during dry weather that contains pollutants or pathogens; 2) have a unique frequency, composition, and mode of entry in the storm drain system; 3) caused when the sewage disposal system interacts with the storm drain system; or 4) discharges from pollutants from specific source areas and operations known as "generating sites."

4.1 Defining an Illicit Discharge

For the purposes of Salem's IDDE Program, the VSMP regulation definition for an illicit discharge is generalized as:

> *Illicit Discharge - Any discharge to an MS4 that is not composed entirely of stormwater, except discharges specifically identified in the Virginia Administrative Code and determined not to be a significant contributor of pollutants to the MS4.*

Most sources of an illicit discharge on City properties are likely to originate from a generating site or activity, such as a washing area or vehicle maintenance area. These could result from daily practices or from a specific spill incident. Table 1 provides source pollutants that could be generated from areas of the City.

Table 1. Examples of source pollutants of an illicit discharge.

• Automotive fluids (oil, fuel, antifreeze)	• Landscape waste (grass clippings, etc.)
• Cooking oil and grease	• Improperly applied fertilizer
• Solvents	• Sediment
• Paints	• Vehicle wash water
• Chemical cleansers (detergents, soaps)	• Sanitary sewer wastewaters
• Improperly applied pesticides/herbicides	• Dumpster leachate
• Improperly managed salts	• Trash

The regulations do have exemptions for some non-stormwater discharges that would not be considered an illicit discharge if not a significant contributor of pollutants to the City's MS4. Table 2 includes discharges relevant to the City that are not significant contributors of pollutants and are not considered illicit discharges. If there is uncertainty of the source or constituents within an observed discharge, the Director should be

contacted immediately so a determination can be made. Contact information is provided on the cover of this document.

Table 2. Examples of sources that are not considered illicit discharges.

• Fire-fighting activities	• Air condition condensate
• Water line flushing	• Footing or foundation drains
• Landscape/lawn irrigation	• Springs
• Diverted stream flows	• Water from crawl space pumps
• Rising groundwater	• Dechlorinated swimming pool wastewater
• Uncontaminated groundwater infiltration	• Discharges from potable water sources
• Uncontaminated pumped groundwater	• Flows from riparian habitats and wetlands

Additional detail for identification of an illicit discharge is provided in the *Salem IDDE Field Guide*.

4.2 Salem's Stormwater Outfall Mapping/Inventory

An outfall can be considered a point where the City's MS4 discharges concentrated flow to surface waters or wetlands, such as at the end of a pipe or open drainage channel. Generally, these are the locations that drain large areas and can be evaluated routinely to identify potential pollutants within the drainage area that are being conveyed to the surface waters. Action can then be taken to prevent these pollutants from passing downstream, such as eliminating the pollutant at its source.

The MS4 permit requires the City to maintain a storm sewer map as part of the IDDE Program that includes location and information of outfalls from the storm sewer system, including the drainage area to the outfall and the receiving water body. The mapping can be a critical tool for outfall screening and in identifying potential generating sites. Outfall information should be maintained by the Director

4.3 Awareness during Daily Activities and Operations

Potential illicit discharges can be removed prior to entering the storm sewer with the identification and appropriate follow-up to determine the source of pollutants. The City maintenance and operations employees are in the best position to identify these pollutants such as those that were identified in Table 1. Figure 3 provides several examples of the observations and actions that could prevent an illicit discharge. If the observer is not qualified or appropriately trained to take the appropriate action, or if illegal dumping is observed, notify the Director. The Salem Good Housekeeping/Pollution Prevention Manual can also be a reference for instruction on appropriate actions.

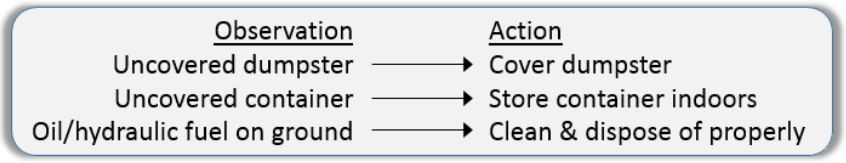

Figure 2. Example daily observations and subsequent actions can prevent an illicit discharge.

4.4 Special Local Water Quality Concerns

Salem's MS4 ultimately discharges to receiving waters that have been identified by the DEQ to not meet water quality standards. Subsequent studies, called Total Maximum Daily Load (TMDL) studies, have been performed by DEQ. The TMDL studies identify specific pollutants causing the impairments to the receiving waters and designate the amount of the pollutant the receiving water can assimilate to achieve water quality standards. A required reduction of the pollutant is typically assigned to the MS4s that drain to the impaired segment of the water body. It is important that Salem maintenance and operations employees be aware of these special pollutants shown in Table 3, which are PCBs, E. coli, and sediment.

Table 3. Special pollutants of concern.

TMDL	Pollutant of Concern	Approval Date
Roanoke (Staunton) River Watershed	PCB	12/9/2012
Upper Roanoke River Watershed	E. Coli	6/27/2009
Upper Roanoke River Watershed	Sediment	9/7/2008

4.5 Reporting Procedures

Actions that are taken to remove potential sources of an illicit discharge do not need to be reported unless it is suspected an illicit discharge has occurred or is occurring. In this case, the employee needs to report the concern to the Director as soon as possible. The Director will then document the report in the tracking form provided in Appendix B and conduct a follow-up investigation as soon as possible to the maximum extent practicable.

An illicit discharge or potential source for an illicit discharges may also be reported by other individuals that are not trained or authorized to perform necessary actions, such as staff, residents or contractors. These individuals may recognize a potential illicit discharge after learning about pollution in stormwater runoff through the City's public education and outreach efforts. The City's stormwater webpage directs these individuals to contact the Director, who will subsequently perform the appropriate follow-up action and documentation in accordance with Section 6.0 of this Manual. If an employee is otherwise notified, the appropriate action should be taken, and if an illicit discharge is potentially occurring, the Director shall be notified.

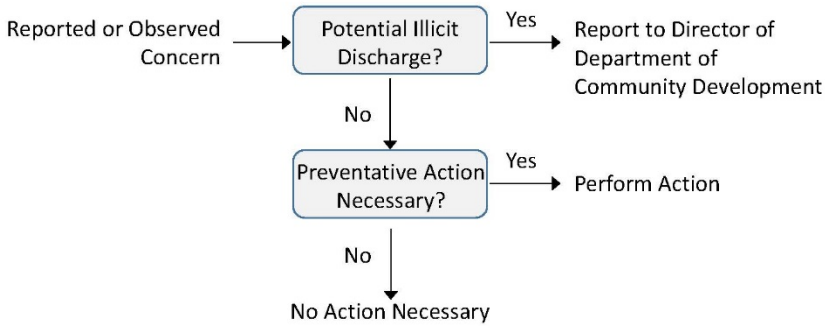

Figure 3. Reporting procedures for Salem field staff.

5.0 OUTFALL SCREENING

As an effort to identify illicit discharge occurrences from the City MS4, annual outfall screening is required by the MS4 Permittee for a minimum of 50 outfalls within the City. The selection of outfalls for screening will be based on a methodology to prioritize outfalls with the highest potential for an illicit discharge unless all outfalls are screened within an MS4 reporting year. In the case that potential illicit discharges are observed at specific outfalls, subsequent screening at a higher frequency may be necessary if the source is not identified and eliminated. A prioritized schedule for screening at least 50 outfalls annually should be determined by the Director based on such criteria as age of infrastructure, land use, historical illegal discharge, dumping, or cross connections. Screening will then be performed and documented as described herein or with a methodology that collects comparable data.

Screening is to be performed at the outfall, as defined in Section 4.2. However, from time to time, an outfall may be inaccessible such as when located midway through a culvert beneath a roadway. In these cases, the screening should occur at the most immediate accessible upstream junction in the system. If additional flow enters the system between the accessible upstream junction and the actual outfall, the immediate accessible junction upstream of each point of entry should be screened (see Figure 4).

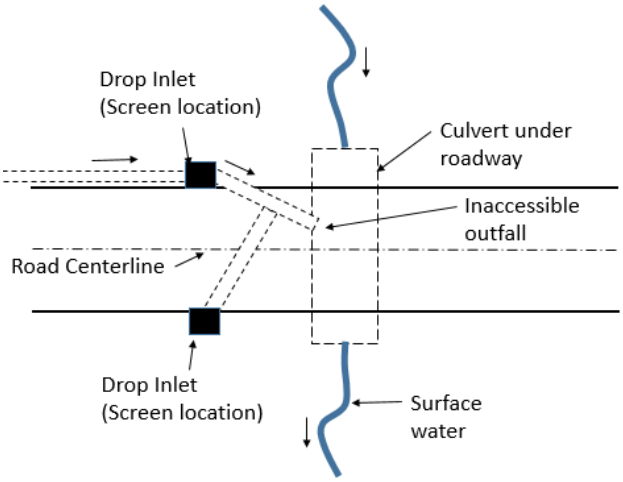

Figure 4. Screening location(s) example in the case of an inaccessible outfall.

5.1 Dry-Weather Outfall Screening

Outfall screening shall be performed during dry weather using the Outfall Reconnaissance Inspection (ORI) Form provided in Appendix B. Completion of the form for each outfall screened serves as the appropriate documentation that the required outfall screening has been performed and should be retained on file for a minimum of 3 years. Outfalls that are flowing during dry weather may indicate an active pollution issue, depending on if rain has occurred during the last 24 to 48 hours. Special attention should be paid to outfalls that are flowing and when no rain has occurred within the last 48 hours. When the screening of an outfall indicates a potential illicit discharge, the Director shall be notified so an investigation, as described in Section 6.0, can be performed.

The ORI Inspection Form includes the following sections, which are to be completed with each annual outfall screening:

- ***Section 1: Background Data*** – Requires general information regarding when and where the screening was performed, weather conditions at the time of the screening and a reference to photos taken. Tips for completing Section 1 include:
  - ✓ The Outfall ID can be found on the City's outfall inventory mapping. The mapping will be updated from time to time to reflect new outfalls.
  - ✓ Take at least 1 photo of the outfall if there is potential of an illicit discharge or other concern for documentation purposes.
  - ✓ Rainfall data can be gathered from the link below by navigating to the vicinity of the outfall on the map and selecting the last day or last 2 days. The map will depict rainfall precipitation ranges using a color scale (See Figure 5):
    http://www.srh.noaa.gov/ridge2/RFC_Precip/

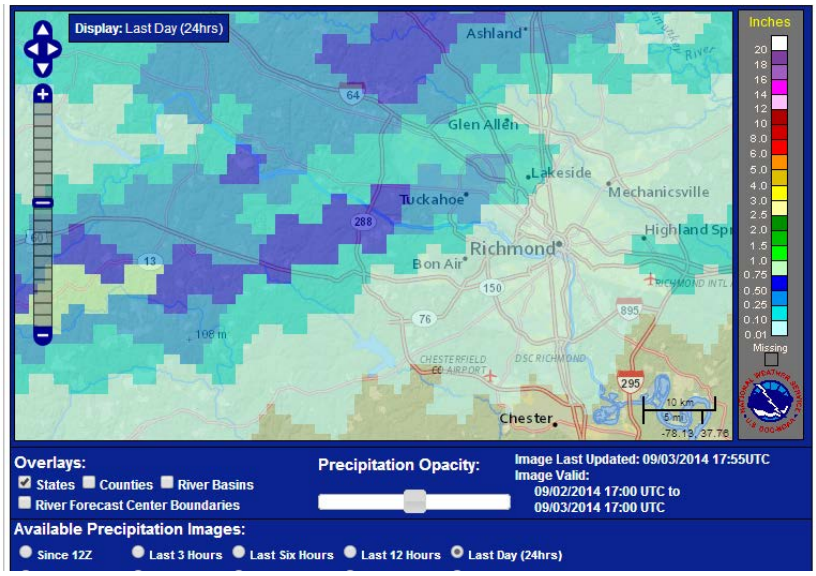

Figure 5. Sample Precipitation Summary

- ***Section 2: Outfall Description*** – Requires a description of the outfall and determination if flow is present during dry weather. If flow is not present, the inspector can skip to Section 6 of the form. Tips for completing Section 2 include:
  - ✓ If the cross-section of a pipe or channel is abnormal, provide a sketch in the available area of the dimension column and label measured dimensions.
  - ✓ If submerged with sediment, attempt to measure the depth of sediment.
  - ✓ The identification of flow is important since flow during dry weather would indicate a non-stormwater discharge. If a pipe is partially submerged, and it is difficult to identify dry-weather

flow, a nearby leaf or blade of grass can be dropped onto the water surface near the outfall. The travel of the object on the surface can help indicate if flow is discharging from the outfall.

- ✓ Upon completion of this section, if no flow is present, skip to Section 5 of the form.

- ***Section 3: Quantitative Characterization for Flowing Outfalls*** – Requires quantitative information of the flow present at the outfall, including information to determine an estimate of the flow rate. The pH and ammonia levels require the use of test strips. The purpose of this information is to help identify the source of the discharge. Tips for completing Section 3 include:
  - ✓ Measuring pH can determine whether a flow is industrial or commercial in nature. Normal stormwater has a pH around 7.
  - ✓ High levels of ammonia (> 0.3 ppm) can indicate excess fertilizer or contamination by sanitary wastewater.
  - ✓ Flow rate can be estimated with the following equations. Measured data from the form is shown in **bold**.

Flow #1 (for pipes):

$$\frac{\boldsymbol{'X'\ liters}}{\boldsymbol{'X'\ seconds}} \times \frac{1\ gallon}{3.78\ liters} \times \frac{60\ seconds}{minute} = Flow\ in\ gpm$$

- ✓ For the Flow #1 calculation, time in seconds is the time to fill the bottle to 'X' liters.

Flow #2 (for open channels):

$$\left[\left(\frac{\boldsymbol{bot.width\ (ft) + \ top\ width\ (ft)}}{2}\right) \times \boldsymbol{depth\ (ft)}\right] \times \frac{\boldsymbol{Length\ (ft)}}{\boldsymbol{travel\ time\ (seconds)}} \rightarrow$$
$$\times \frac{7.48\ gallons}{1\ cubic\ ft} \times \frac{60\ seconds}{minute} = Flow\ in\ gpm$$

- ✓ For the Flow #2 calculation, travel time is estimated by the time it takes a floating object to travel the defined length.

- ***Section 4: Physical Indicators for Flowing Outfall*** – Requires the observance of physical indicators in the flow, such as odor and color, to assist with identifying the source of the discharge. Tips for completing Section 4 include:
  - ✓ Take photos of visible indicators.

- ***Section 5: General Physical Indicators for All Outfalls*** – Requires physical indicators be noted that are not related to flow, such as abnormal vegetation and staining, which can indicate that an intermittent discharge has occurred in the past, even if not currently flowing. Tips for completing Section 5 include:
  - ✓ Take photos of visible indicators.
  - ✓ Note benthic growth, such as algae or slime on channel surfaces, which can be an indicator of nutrients in the stormwater runoff (See Figure 6).

Figure 6: Example Photo showing algae growth

- ***Section 6: Outfall Severity Index*** – Requires the assignment of a severity score for prioritizing outfall follow-up investigation, if necessary. The severity of concern at an outfall is best judged by the outfall inspector. The rating system provided on the form is intended to provide consistency and guidance; but the intuition of the inspector overrides the scoring rules. Outfalls can be characterized as:
  - ✓ Unlikely to be subject to an illicit discharge. No further action is necessary.
  - ✓ Potential illicit discharge occurring at the outfall.
  - ✓ Suspect illicit discharge occurring at the outfall.
  - ✓ Obvious illicit discharge occurring at the outfall.

  For all potential, suspect or obvious illicit discharges, report to the Director as soon as possible to the maximum extent practicable.

- ***Section 7: Any Non-illicit Discharge Concerns*** – The inspector performing the outfall screening identifies any other concerns such as trash, overgrowth prohibiting flow, or structural concerns of the outfall (e.g. collapsed pipe).

5.2 Wet-Weather Screening

While dry-weather screening events can identify possible illicit interconnections that are continuous, wet weather screening events may identify pollutant discharges that are temporary and/or likely to result from improper storage of polluting materials or inadequate cleanup of off-site pollutant releases. Wet-weather screening may be appropriate if dry weather screening identifies physical indicators from Sections 4 and 5 of the ORI Inspection Form.

6.0 INVESTIGATING ILLICIT DISCHARGE

In the case of the identification of an illicit discharge, it is necessary to conduct an investigation to identify and eliminate the source of the discharge. An investigation may result from:

- A report to City staff from the general public;
- A report from an interconnected MS4; or
- Results of outfall screening.

The determination of if an illicit discharge has occurred will be made by the Director. **In all cases of an illicit discharge, the Salem IDDE Tracking Form must be completed as documentation for MS4 permit annual reporting.**

An investigation of an illicit discharge may result in the source being easily identified or may be complex and should utilize instruction in this manual, the IDDE Field Guide, and storm sewer mapping, and may require coordination with administrators of interconnected MS4s. Contact information for interconnected MS4s is provided in Appendix A.

The following sections outline the methodologies that should be followed in the investigation an illicit discharge.

6.1 Investigation Triggers and Prioritization

Upon the identification of an illicit discharge, the date, location, and description must be reported in the Salem IDDE Tracking Form. Note that Section 6 of the ORI Inspection Form should be referenced to estimate a severity Index classification. The following shall trigger an investigation:

- The determination of the occurrence of an illicit discharge by the Director based on an observed illicit discharge by City staff, such as during daily activities, or a follow-up from a reported observation.
- A severity index classification of either potential, suspect, or obvious. If more than one outfall screening produces one of these classifications, investigation efforts shall be prioritized as:
    1. Obvious – Illicit discharge(s) suspected of being sanitary sewer discharges or significantly contaminated would have this classification.
    2. Suspect – Numerous physical indicators result in this classification.
    3. Potential – These discharges should not be expected to be hazardous to human health and safety.

The start date of the investigation is required to be provided on the Salem Illicit Discharge Tracking Form.

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6.2 Investigation Protocol

Based on the familiarity of the property and its drainage areas, an initial field evaluation may easily identify the source of an illicit discharge. Once found, the source should be documented on the Salem Illicit Discharge Tracking Form. The remainder of the form shall be completed as appropriate to indicate the source has been eliminated, if applicable, and provide an ending date for the investigation. **It is critical that documentation on the Salem Illicit Discharge Tracking Form is complete to demonstrate illicit discharges have been addressed in accordance with MS4 permit conditions.**

If the source of an illicit discharge is not easily identified, further investigation is necessary and should be guided by the following procedures:

1) Track the illicit discharge to its point of entry into the storm sewer. Tracking can be supplemented with review of the Salem outfall mapping to identify the drainage area.
2) Conduct a field inspection of the drainage area near the point of entry to identify the potential pollutant source. Document potential sources with photos, ensuring the photos give the appropriate context to the location of the source.

City staff will primarily rely upon visual inspections of the areas in the storm sewer system above the outfall at which an illicit discharge is detected. Sampling and analysis can be performed as necessary to determine the characteristics of the illicit discharge and to help identify the most likely source. Improper connections and unpermitted cross-connections to the storm sewer system can be detected by utilizing a combination of methods to investigate non-stormwater discharges, such as visual/video inspections, and dye or smoke tracer testing. Dry-weather testing at a discharge point assists in identification of abnormal conditions such as sporadic or continuous discharge, which can facilitate tracing of the source. Tracking techniques also include visual inspections of drainage structures and lines, dye testing, damming lines to isolate areas, video inspection, indicator monitoring, smoke testing, and optical brightener monitoring traps.

Other more elaborate approaches include using remote sensing tools to identify soil moisture, water temperature, and vegetation anomalies associated with illegal dumping activities. Due to the size of the City properties, it is not anticipated these types of tracking strategies will be necessary and further discussion is outside of the scope of this Manual.

If the illicit discharge is determined to originate outside of City, then the appropriate locality and/or MS4 Program authority should be contacted by City staff and the request made to eliminate the discharge. The interconnected MS4 should initiate corrective action per their prescribed process. City staff will follow up with the responsible entity to verify the corrective action has been successfully implemented, and the final action will be documented and tracked on the Salem IDDE Tracking Form.

Additional detail for conducting an investigation is provided in the *Salem IDDE Field Guide*.

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6.3 Timeframes for Performing Investigations

Generally, investigation of a potential illicit discharge should initiate as soon as possible to the maximum extent practicable. However, if necessary due to resources, the timeframe for initiation of an investigation should be prioritized with first priority given to illicit discharges suspected of being sanitary sewage or otherwise significantly contaminated. Additionally, investigation priority should be targeted as (1) "obvious" illicit discharge, (2) "suspect" illicit discharge and (3) "potential" illicit discharge as described in the Severity index described in Section 5.1.

If, after performing an investigation of an observed or reported illicit discharge, the source of the discharge has not been identified and the non-stormwater discharge has not been detected again after 6 months, efforts will be documented and the discharged identified as "non-recurring" with "source not found" on the Salem IDDE Tracking Form. At that time, no further action is necessary. However, investigatory due diligence should include (with documentation):

- The tracking and field inspection methods described in the previous Section were performed;
- At least one additional dry-weather screening during the 6 month time period; and
- At least one wet-weather screening.

If an observed discharge is intermittent, City staff will perform **three separate investigations** attempting to observe the discharge when it is flowing. If these attempts are unsuccessful, City staff will also document the occurrence and process and no further action is necessary.

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7.0 ELIMINATING VERIFIED ILLICIT DISCHARGES

The ultimate goal of the IDDE Program is to eliminate illicit discharges from the MS4. Once an illicit discharge has been identified and an investigation has determined the source of the discharge, the appropriate actions need to be taken and documented to eliminate the discharge.

7.1 Source Elimination

The City of Salem prohibits illicit discharge into its MS4 through the Illicit Discharge Detection and Elimination Ordinance (Chapter 30, Article 5 of the City Code). Prohibition is also addressed through contract language with contractors performing work on City property. Further, the City's daily operations intend to prevent illicit discharges through the practices described in the Salem Good Housekeeping/Pollution Prevention Manual. The City should utilize these mechanisms to eliminate illicit discharges at the source.

When an illicit discharge originates within the City, City staff will take the necessary corrective action to eliminate the discharge. Follow-up inspections may be necessary to ensure the discharge into the City storm drain system has ceased. Periodic inspections should be conducted during both wet and dry-weather after the initial illicit discharge to confirm the identified discharge has been eliminated. Actions and resolutions must be documented and maintained on file for 3 years.

When the source of an illicit discharge originates outside of the City, and therefore Salem does not have authority to eliminate the source, the Virginia Department of Environmental Quality (DEQ) and interconnected MS4s should be contacted by the Director, as applicable. Figure 7 provides the enforcement authorities to contact based on the type of illicit discharge. This list is not all inclusive, but was developed in coordination with DEQ and is based on typical sources of illicit discharges.

Reports of illicit discharge to an outside agency should be maintained on file and include all information related to the case including dates, locations, photos, results of screenings and investigations, and identified sources. The report should also request confirmation from the locality or DEQ that the case has been resolved.

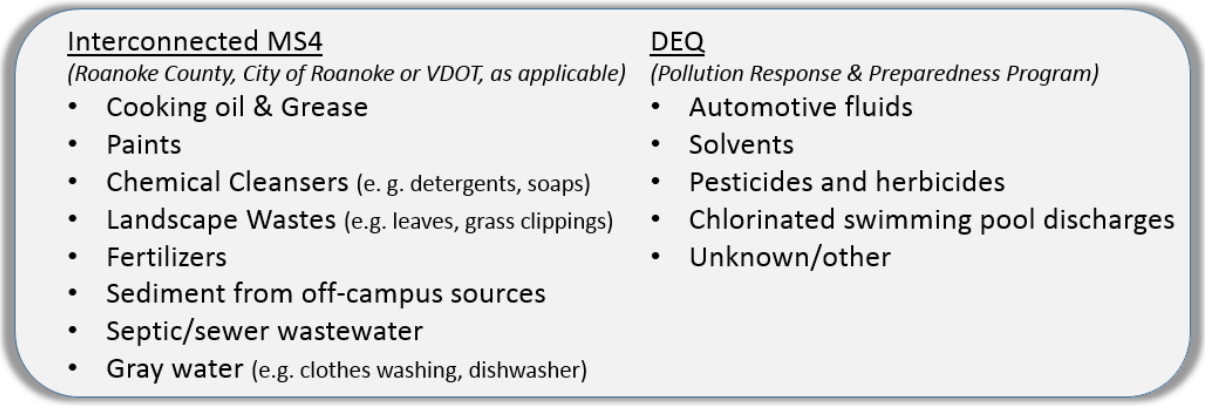

Figure 7. Illicit discharge enforcement contacts when sources are from outside the City.

7.2 Follow-up on Source Elimination

Prior to closure of an illicit discharge investigation, Salem is required to conduct or request a follow-up investigation to ensure the illicit discharge has been eliminated. When the source originated within the City, the follow-up investigation may simply include a field inspection with documentation including photos where the source had previously been identified. In the case of an illicit discharge originating outside of the City, follow-up should include a request for information from the appropriate upstream enforcement entity. This documentation should be provided with the Salem IDDE Tracking Form.

7.3 Administrative Action, Enforcement and Penalties

Salem prohibits illicit discharge into its MS4 through language provided within City's Illicit Discharge Ordinance (Chapter 30, Article V of the City Code). If an individual or entity is identified during an illicit discharge investigation to be responsible for contributing to the discharge, the following binding documents will be utilized to conduct any necessary administrative action, enforcement, or penalties.

- Illicit Discharge Ordinance (Chapter 30, Article V of the City Code) – Causing an illicit discharge could be considered damage to City property or facilities and a violation of state and federal law under the Clean Water Act. The IDDE ordinance will dictate appropriate penalties.
- Contract Language – Salem can pursue administrative actions within its authority, such as revocation with a Stop Work Order for construction sites or suspension or revocation of a contract.

Salem may refer the complaint to DEQ for further investigation following their procedures, including enforcement provisions, in accordance with the Code of Virginia (§18.2-119) as appropriate.

7.4 Reportable Spills

If any unusual or extraordinary discharge should occur from a facility and the discharge enters or could be expected to enter surface waters, the operator shall promptly notify, in no case later than within 24 hours, DEQ by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse effects on aquatic life and the known number of fish killed. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

- Unusual spillage of materials resulting directly or indirectly from processing operations;
- Breakdown of processing or accessory equipment;
- Failure or taking out of service some or all of the facilities; and
- Flooding or other acts of nature.

NOTE: The immediate (within 24 hours) reports required to be provided to DEQ may be made to the appropriate Regional Office Pollution Response Program as found at http://deq.virginia.gov/Programs/PollutionResponsePreparedness.aspx. Reports may be made by telephone or by fax. For reports outside normal working hours, leave a message and this shall fulfill the immediate reporting requirement. For emergencies, the Virginia Department of Emergency Services maintains a 24-hour telephone service at 1-800-468-8892.

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APPENDIX A: Salem Outfall Reconnaissance Inspection Form

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SAMPLE OUTFALL RECONNAISSANCE INSPECTION FORM

Section 1: Background Data

Outfall ID:		
Today's date:		Time:
Investigators:		Form completed by:
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:
Camera:		Photo #s:
Notes (e.g., origin of outfall, if known):		

Section 2: Outfall Description

LOCATION	MATERIAL	CROSS-SECTION (SHAPE)		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ Concrete ☐ Corrugated Metal ☐ Plastic ☐ Other: _____	☐ Circular ☐ Elliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ **Open channel**	☐ Concrete ☐ Earthen ☐ Rip-Rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
Flow Present?	☐ Yes ☐ No ***If No, Skip to Section 5***				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	Stop watch
☐Flow #2	Flow depth		In	Tape measure
	Flow width	_____' (Top) _____" (Bottom)	Ft	Tape measure
	Measured length	_____' _____"	Ft	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inspection Form

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: General Physical Indicators for both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	.
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Severity Index

An IDDE score will be calculated by summing the Severity Indexes in section 4 and adding the number of indicators checked as present in section 5

☐ **Unlikely** (No indicator checked as present in Section 4 OR only **one (1)** indicator checked as present in Section 5)

☐ **Potential –** (one (1) indicator with a severity of **one (1)** in Section 4 OR **two (2)** indicators checked as present in Section 5)

☐ **Suspect - IDDE score of Three (3)** (one or more indicators checked in Section 4 with a total of severities **equal to three (3)** OR **more than two (2)** indicators checked as present in Section 5 OR a total of severities in Section 4 plus indicators checked as present in Section 5 is equal to three (3))

☐ **Obvious – IDDE score of greater than Three (3)** (one or more indicators checked in Section 4 with and the total of the severities **is greater than three (3)** OR a total of severities in Section 4 plus indicators checked as present in Section 5 **is greater than three (3)).**

IDDE Notes:

Section 7: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

APPENDIX B: Salem IDDE Tracking Form

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IDDE TRACKING Form

Date Illicit Discharge Observed/Reported:_____ **Outfall # (if applicable):**_____

Description of IDDE: _____

_____

Date of Investigation: _____

Was the Source found? ☐ **Yes** ☐ **No**

If "Yes", please describe: _____

_____

Was IDDE Resolved? ☐ **Yes** ☐ **No**

If "Yes", please explain how it was resolved (Please include any personnel or outside parties contacted or involved):

_____

_____

_____

If "No", please explain why it was not resolved: _____

_____

_____

Is any follow-up action required? ☐ **Yes** ☐ **No**

If "Yes", please explain: _____

_____

Date investigation closed: _____

Attach photos to this form and retain for records.