# SECTION 4

WATER QUALITY RELATED
STANDARD OPERATING PROCEDURES (SOP)
UPDATED 2023

City of Monessen

Westmoreland County,

Pennsylvania

# Water-Quality Related STANDARD OPERATING PROCEDURES

July
2023

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## Introduction

The Pennsylvania Department of Environmental Protection (DEP) reissued a **M**unicipal **S**eparate **S**torm **S**ewer **S**ystem (MS4) Permit to the City, which became effective on March 16, 2018. This permit regulates discharges to the City's storm sewer (i.e., storm drainage) system, and Waters of the Commonwealth of Pennsylvania. As part of the MS4 Permit requirements, the City is required to develop and follow written procedures for day-to-day activities that have the potential of discharging pollutants to storm drains and, ultimately, to streams and the Monongahela River.

To that end, the following Standard Operating Procedures (SOPs) have been developed. These SOPs are intended to serve as a guide for employees in their day-to-day activities across the various City departments; the goal of these SOPS is to avoid pollution to the City storm drainage (i.e., MS4) system, and thereby protect water quality in the receiving streams and the Monongahela River.

The SOPs were intentionally written to be generic in nature in order to have broad application over the myriad activities that are conducted on a daily basis within the City's very diverse departments. Should any of the department-specific SOPs conflict with the general SOPs currently utilized by the City, the more restrictive shall apply.

## How to Use this Document

Each department shall be responsible for assuring that its employees are properly trained to follow the SOPs in this manual, if applicable, to ensure that the day-to-day activities in each department do not adversely affect the storm drainage (i.e., MS4) system.

## City of Monessen Must Maintain This Document

Standard Operating Procedures may change with time, and additional SOPs may need to be developed. Any employee who believes that a SOP should be revised or that an additional SOP is needed should notify their supervisor. The supervisor should contact the City Council representative in charge of the respective department.

## Who Has To Use This Manual?

All City Departments and their employees must follow these SOPs when engaging in any of the listed activities.

# SOP 1.0 - Chemical Application of Pesticides, Herbicides, and Fertilizers

## 1. Preparation

a) Ensure appropriate personnel have current state certifications for chemical handling before handling any pesticides, herbicides, or fertilizers (products).
b) Calibrate product application equipment to avoid over-application.
c) Use products only if there is an actual pest problem.
d) Periodically test soils for determining need to fertilize and appropriate amounts, or comply with the Nutrient Management Plan.
e) Apply all products at a rate and in the season specified by the manufacturer (i.e., "Read the Label"), and apply in accordance with the Nutrient Management Plan, if applicable.
f) Know the weather conditions. Do not use products when rain is expected. Apply products only when wind speeds are low (i.e., less than 5 mph).

## 2. Process

a) Always follow the manufacturer's recommendations for mixing, application, and disposal (i.e., "Read the Label").
b) Do not mix or prepare products for application near storm drains or streams; preferably, mix inside a protected area with impervious secondary containment, preferably inside a building, and away from floor drains so that spills or leaks will not contact soils. If products must be mixed in the field, use precautions to prevent spills or leaks from contacting soils.
c) Employ techniques to minimize off-target application (i.e., spray drift, over-broadcasting) of products.
d) Do not apply to waterways.

## 3. Cleanup

a) Sweep any applied fertilizers from pavements and sidewalks onto grassy areas before applying irrigation water.
b) Triple rinse containers and use rinse water as product. Dispose of unused pesticide as hazardous waste.
c) Always follow all federal and state regulations governing use, storage, and disposal of products and their containers (i.e., "Read the Label").

## 4. Documentation

a) Keep copies of MSD sheets for all products used.
b) Record fertilizing and pesticide application activities, including date, individual who did the application, amount of product used, location, and approximate area covered.

# SOP 2.0 - Chemical Storage/Handling/Transporting and Spill Response

## 1. Preparation

a) Understand MSDS sheets for storage and handling of all chemicals.
b) Determine proper place for chemical storage and handling.
c) Minimize the amount of chemical stored onsite.
d) Store undercover, out of the reach of rainfall or stormwater runoff.
e) Have necessary containment and spill kits at handling place.

## 2. Process

a) Begin transfer process.
b) Discontinue operations if spills occur.
c) Disconnect and store handling equipment.

## 3. Cleanup

a) Contain and clean up spills with proper containment devices and absorbent material.
b) Dispose of contaminated material at an appropriate facility.

## 4. Documentation

a) Report spills that escape the site to:

**City of Monessen Code Enforcement Office**
(724) 684-9717

b) Provide the following information, if known:

- **Where:** The location of the incident.
- **When**: When the event occurred.
- **What:** Specify what was released and how much.
- **Who:** Specify the source of the problem and/or the company/individual involved with the problem.

# SOP 3.0 – Curb Painting

## 1. Preparation

a) Calculate the amount of paint required for the job.
b) Use water-based paints, if applicable.
c) Determine locations of storm drain inlets and sewer inlets that may need to be protected.
d) Prepare surfaces to be painted without generating wastewater by sandblasting and/or scraping. Thoroughly sweep up all sand, blasting, and/or paint scrapings and dispose of at an appropriate waste facility.
e) If surfaces are prepared using power washer, then use only water (no chemicals) and direct all wash water to a grassed area and allow it to soak into the ground.
f) If paint stripping is needed, use a citrus-based paint remover whenever possible, as it is less toxic than chemical strippers. Collect all waste and properly dispose of it.

## 2. Process

a) Paint curb.
b) Prevent over-spraying of paints and/or excessive sandblasting
c) Use drip pans and drop clothes in areas of mixing paints and painting
d) Store latex paint rollers and brushes in airtight bags to be reused later with the same color.
e) Have available absorbent material and other Best Management Practices (BMP's) ready for an accidental paint spill.

## 3. Cleanup

a) Paint out brushes and rollers as much as possible. Squeeze excess paint from brushes and rollers back into the containers prior to cleaning them.
b) Pour excess paint from trays and buckets back into the paint can containers and wipe with cloth or paper towels. Dispose of the towels according to the recommendations on the paint being used.
c) Rinse water-based paint brushes in a sink that is connected to a sanitary sewer after pre-cleaning. Never pour excess paint or wastewater from cleanup of paint in the storm drain or onto the ground.
d) Clean up oil-based paints with paint thinner. Never clean oil-based brushes in a sink or over a storm drain. Filter solvents for reuse if possible and/or store in approved drum for recycling.
e) Dispose of waste collected by placing it in a garbage container. Left-over paint and solvents should be stored for later use (do not place these liquids in the garbage).

## 4. Documentation

a) Write-up/report of any discharges into storm drain system.

# SOP 4.0 – Detention Pond Cleaning

## 1. Preparation

a) Schedule the work for a time when dry weather is expected.
b) Do a visual inspection to make sure any grates, structures, manholes, boxes, and pipes are in good working order. Remove manhole covers and grates, as necessary, for inspecting.

## 2. Process

a) Provide outlet protection, where feasible, to minimize the amount of debris that might leave the pond during the cleaning process.
b) Employ other erosion and sediment controls, as necessary.
c) Remove any sediment and trash from grates, placing it in a truck for disposal and dispose of at an approved waste area.
d) Remove debris and sediment from the pond bottom and outlet structure using a backhoe, excavator, vacuum truck or other equipment, as necessary.
e) Put all material removed from the pond into a dump truck and haul to an approved disposal site.
f) Re-grade or reshape pond bottom and slopes, if needed, after maintenance work is complete, and re-stabilize with grass.

## 3. Cleanup

a) After cleaning the pond, clean off any associated concrete pads using dry methods, such as sweeping and shoveling.
b) Take all collected materials to an approved landfill or other disposal site.

## 4. Documentation

a) Keep a log of each pond cleaned including date, location, individuals involved in cleaning, a description of the type of material/debris removed and provide the name and location of the approved landfill or disposal site.
b) Record the amount of collected material.
c) Keep any notes or comments of any problems.
d) Take before and after photographs.

# SOP 5.0 – Ditch Maintenance

## 1. Preparation

a) Monitor ditches on a regular basis or respond to complaint.
b) Contact affected property owners and utility owners prior to conducting work.
c) Identify areas requiring maintenance.
d) Determine what manpower or equipment will be required.
e) Identify access and easements to area requiring maintenance.
f) Determine method of maintenance that will be least damaging to the ditch channel and adjacent properties or utilities.

## 2. Process

a) Maintain access to ditch channels wherever possible.
b) Install erosion and sediment controls, as necessary, prior to initiation of work.
c) Conduct all maintenance activities.
d) Remove collected material (debris, branches, soil) from the ditch and place it in a truck to be hauled away to an approved disposal site.
e) Direct responsible party to initiate repairs/corrections/cleanup.

*For Private Property Owner:*

- Contact Owner
- Issue Notice of Violation for violations, and
- Determine schedule for maintenance and implementation of any prescribed corrective actions along with deadline to make corrections; advise responsible party of same

*For City of Monessen Facility:*

- Notify appropriate department head
- Schedule maintenance implementation of the prescribed corrective actions

## 3. Cleanup

a) Stabilize all disturbed soils.
b) Remove all tracked sediments from paved surfaces near maintenance site, if applicable.
c) Haul all collected material to an approved dumping site.
d) Remove any temporary erosion controls.

## 4. Documentation

a) Keep a log of maintenance activities, including date, location and individuals involved.
b) Record the amount of materials removed or imported.
c) Keep any notes or comments of any problems.
d) Use “before” and “after” photographs to document activities as applicable.

# SOP 6.0 - Drainage Structure Cleaning

## 1. Preparation

a) Do visual inspection to see what needs to be cleaned and/or replaced.

## 2. Process

a) Clean structure by hand or with hand tools, removing accumulated trash, debris, and sediment.
b) In cases where more extensive cleaning is needed, hire an outside contractor to use a high-powered vacuum truck to suck out standing water and sediment.
c) Direct responsible party to initiate repairs/corrections/cleanup.

*For Private Property Owner:*

- Contact Owner
- Issue Notice of Violation for violations, and
- Determine schedule for maintenance and implementation of any prescribed corrective actions along with deadline to make corrections; advise responsible party of same

*For City of Monessen Facility:*

- Notify appropriate department head
- Schedule maintenance implementation of the prescribed corrective actions

## 3. Cleanup

a) Remove any collected materials and dispose of them at an approved onsite facility. Also remove any hand tools from site.

## 4. Documentation

a) Keep logs of location and number of drainage structures cleaned.
b) Record the amount of waste collected.
c) Keep any notes or comments of any problems.

## SOP 7.0 – Dumpsters/Garbage Storage

### 1. Preparation

a) Locate dumpsters and trash cans in convenient, easily observable areas. Avoid placing dumpsters in areas where stormwater runoff will run through the dumpster area.
b) Where possible, provide recycling bins to encourage recycling and to reduce the amount of trash and garbage that is being thrown away.
c) Install berms, curbing, or vegetated filter strips around container storage areas to control water entering/leaving storage areas.
d) Whenever possible, store garbage containers beneath a covered structure or inside to prevent contact with rainwater.

### 2. Process

a) Regularly inspect garbage bins for leaks and immediately make any necessary repairs.
b) Provide/use dumpsters and trash cans with lids and without drain holes; ensure lids are kept closed.
c) Locate dumpsters on a flat, hard surface that does not slope or drain directly to the storm drain system.

### 3. Cleanup

a) Keep surrounding areas near dumpsters and trash cans clean of all trash and garbage.
b) Have garbage bins emptied regularly to keep them from overflowing.
c) Clean bins or dumpsters, as needed, to keep odors from becoming a problem. When these containers are rinsed, ensure wash water does not enter the storm drain system. Wash these containers in a grassed area and allow washwater to infiltrate into the ground.

### 4. Documentation

a) Document training of employees.

# SOP 8.0 – Equipment Cleaning

## 1. Preparation

a) Transport equipment in need of cleaning to the approved wash station at the City Maintenance Garage.

## 2. Process

a) Wipe off dirt, dust, and fluids with a disposable towel.
b) Wash equipment in an approved wash station.
c) Ensure wash waters are disposed of in a sanitary sewer.

## 3. Cleanup

a) Dispose of towels in proper trash receptacle.
b) Sweep floor and dispose of debris.

## 4. Documentation

a) Document training of employees.

# SOP 9.0 – Grass Mowing and Trimming

## 1. Preparation

a) Review process with all affected employees.
b) Check the oil and fuel levels of the mowers and other equipment; fill if needed.
c) Use the appropriate fuel mixture and/or type in all mowers and other equipment.

## 2. Process

a) Wear appropriate clothing and eye and hearing protection. Use other safety equipment, as needed.
b) Mow and trim the designated lawn area; ensure mower shoot does not direct clippings to pavement, drainage ways, or drainage inlets.
c) Either bag clippings and dispose of in trash, or mulch and mow. Sweep and blow clippings that are on paved areas or adjacent to storm drain inlets to grass areas.

## 3. Cleanup

a) Clean mowers by scraping and brushing at the shop and wipe off any oils; dispose of dry spoils in the proper trash receptacle.
b) Wash equipment in an approved wash station.
c) Ensure all wash waters are disposed of or directed into the sanitary sewer system.

## 4. Documentation

a) Document training of employees.

# SOP 10.0 - Illicit Discharge Detection and Elimination (IDDE): Citizen-Initiated Investigations

## 1. Preparation

a) Have a system in place to receive citizen reports, either via phone calls, walk-ins, or online, of suspected illicit discharges.

## 2. Process

a) Use the "*Illicit Discharge Hotline Incident Tracking Sheet*", included in the Appendix, to collect the appropriate information from the citizen OR receive such information from the online "*Illicit Discharge Reporting Form*", also included within the Appendix.
b) Forward the incident report to the City's Code Enforcement Officer, or if unavailable, to the City Engineer.
c) The Code Enforcement Officer/City Engineers will promptly investigate reported incidents.
d) If an illicit discharge of unknown source is confirmed, the standard operating procedure for *IDDE - Illicit Discharge* source tracking will be followed.
e) If the source of an illicit discharge is known or identified, the standard operating procedure for *IDDE – Removing an Illicit Discharge* will be followed.

## 3. Cleanup

a) Clean receiving drainage inlet or initiate spill response, as applicable. Follow relevant SOPs.
b) Remove all cleaning materials and products once illicit discharge has been rectified.

## 4. Documentation

a) File all completed forms (i.e., incident tracking, inlet cleaning, etc.).
b) Document any further action that was taken.
c) Review incidents reported by citizens on an annual basis to look for patterns of illicit discharges and to evaluate the citizen-initiated inspection program.
d) Document training of employees.
e) Use "before" and "after" photographs to document the activities.

# SOP 11.0 - IDDE: Illicit Discharge Observation by Employee

## 1. Preparation

a) Ensure staff has been trained to recognize illicit discharges.
b) Be alert for potential illicit discharges while conducting normal work activities.

## 2. Process

a) Call the City's Code Enforcement Officer, or if unavailable, the City Engineer, when evidence of an illicit discharge is observed.
b) Assess the general area of the illicit discharge to see if its source is apparent.
c) Take photographs of the suspected illicit discharge.
d) The Code Enforcement Officer will investigate and complete the following:
    i. Use the "*Illicit Discharge Reporting Form*" to document observations.
    ii. Obtain a sample for visual observation and complete an "*MS4 Outfall Screening Report*," form if applicable.
    iii. Follow the standard operating procedure for *IDDE - Illicit Discharge Source Tracking (SOP 14.0).*

## 3. Cleanup

a) Clean receiving drainage inlet or initiate spill response, as applicable. Follow relevant SOPs.
b) Remove all cleaning materials and products once illicit discharge has been rectified.

## 4. Documentation

a) File all completed forms (i.e., incident tracking, inlet cleaning, etc.).
b) Document any further action that was taken.
c) Document training of employees.
d) Use "before" and "after" photographs to document the activities.

# SOP 12.0 - IDDE: Outfall Inspections

## 1. Preparation

a) Select outfalls to be inspected before leaving the office; attempt to select outfalls in the same geographic area to avoid unnecessary trips across the City.
b) Know the past and present weather conditions. Check the recent rainfall amounts for the last 72 hours.
c) Conduct inspections during dry weather periods, or 72 hours after previous rainfall event.
d) Ensure that proper clothing and boots are worn. Use insect repellant, if applicable. Consider and properly address any safety concerns.
e) Gather all necessary equipment including tape measure, clear container, camera, clipboard with necessary forms, and flashlight.
f) Obtain maps showing outfall locations and identifiers.
g) Obtain outfall description and observations from previous inspections, so that the outfall can be accurately identified, and observations compared.
h) Take the outfall inspection forms and all necessary equipment to the site; ensure equipment is charged and working before leaving the office.

## 2. Process

a) Perform an inspection of outfalls identified by the Code Enforcement Officer. Whenever, possible use the same personnel for consistency in observations.
b) Identify each outfall with a consistent and unique identifier. Use maps and previous inspection reports to confirm the outfall identity and location.
c) Upon locating the outfall, fill out the "*MS4 Outfall Screening Report*" form, take a picture of the condition of the outfall, and note on the field sheet which picture corresponds to the data.
d) Verify that the actual file name is on the picture rather than the number of the picture out of total pictures left.
e) If dry weather flow is present at the outfall, then document and evaluate the discharge by completing the following steps:
    i. Collect field samples for visual observations in a clean, clear container and in a manner that avoids stirring up sediment that might distort the observation.
    ii. Characterize and record observations on basic sensory and physical indicators (i.e., outfall condition, flow, odor, color, oil sheen) on the "*MS4 Outfall Field Screening Report*" form.
        1. Compare observations to previous inspections.

2. If the flow does not appear to be an obvious illicit discharge (i.e., flow is clear, odorless, etc.), attempt to identify the source of the flow (groundwater, intermittent stream, etc.).

f) If an illicit discharge (such as raw sewage, petroleum product, paint, etc.) is encountered or suspected, follow the standard operating procedure for *IDDE - Illicit Discharge Source Tracking* (SOP 14.0).

g) After collecting all the data for the outfall, use spray paint to record the Outfall ID on the outfall itself, evidencing for future inspections that it has been inspected.

## 3. Cleanup

a) Remove all test materials and equipment once outfall inspection is complete.

## 4. Documentation

a) File all completed Outfall Inspection Forms.

b) Update maps when new outfalls are observed and inspected.

c) Save the pictures in a file named with the date of the inspection on the City of Monessen Server.

d) Paste the link for the picture that corresponds to each outfall in the Outfall Inspection folder Database, under the column named "PhotoPath"

e) Document training of employees.

# SOP 13.0 - IDDE: Removing an Illicit Discharge

## 1. Preparation

a) Obtain available property ownership information for the source of the illicit discharge.

## 2. Process

a) Suspend access to any nearby storm drainage inlets if illicit discharge has the potential to enter the MS4.
b) Direct responsible party to initiate repairs/corrections/cleanup. Coordinate with the appropriate enforcement official for escalating penalties in accordance with the City's Illicit Discharge Ordinance.

*For Private Property Owner:*

- Contact Owner
- Issue Notice of Violation for violations of the Illicit Discharge Ordinance, and
- Determine schedule for removal; advise responsible party of same

*For City of Monessen Facility:*

- Notify appropriate department head
- Schedule removal, and
- Remove illicit discharge

c) Seek technical assistance from the City of Monessen Health Department or Pennsylvania Department of Environmental Protection, if needed.

## 3. Cleanup

a) Confirm illicit discharge is removed or eliminated by follow-up inspection.

## 4. Documentation

a) Maintain records of notice of violation and penalties.
b) Document repairs, corrections, and any other actions required.
c) Document training of employees.
d) Provide Before and After photographs

# SOP 14.0 - IDDE: Illicit Discharge Source Tracking

## 1. Preparation

a) Review information collected when illicit discharge was initially identified and document using *"Illicit Discharge Report Form"* or *"MS4 Outfall Screening Report"* form.
b) Obtain storm drain mapping for the area of the reported illicit discharge.
c) Gather all necessary equipment including: tape measure, camera, clear container, clipboard with necessary forms, and flashlight.

## 2. Process

a) As a first step, inspect the general area and surrounding properties to identify potential sources of the illicit discharge.
b) Next, trace the illicit discharge using visual inspections of upstream points. Use available mapping to identify tributary streams, pipes, catch basins, etc.
c) If the source of the illicit discharge cannot be determined by a survey of the area or observation of the storm drainage system, consider the following additional steps:
    i. Use weirs, sandbags, dams, or optical brightener monitoring traps to collect or pool intermittent discharges during dry weather.
    ii. Smoke test or televise the storm drainage system to trace high priority, difficult-to-detect illicit discharges.
    iii. Dye-test individual discharge points within suspected buildings.
    iv. Consider collecting bacterial samples of flowing discharges to confirm/refute illicit discharge.
d) If the source is located, follow procedure for *IDDE - Removing Illicit Discharges* (SOP 13.0).
e) If the source cannot be found, add the location to a future inspection program.

## 3. Cleanup

a) Clean receiving drainage inlet or initiate spill response, as applicable. Follow relevant SOPs.
b) Remove all cleaning materials and products once illicit discharge has been rectified.

## 4. Documentation

a) Document tracking results for future reference.
b) Document repairs, corrections, and any other actions required.
c) Document training of employees.

# SOP 15.0 - Open Space Management

## 1. Preparation

a) Provide for regular observation and maintenance of the City's parks, greenways, and other public open spaces.
b) Identify public open spaces that are used for stormwater detention, and verify that detention areas are included on the storm drain system mapping, inspection schedules, and maintenance schedules.

## 2. Process

a) Ensure that any storm drain or drainage system components on the various properties are properly maintained.
b) Avoid placing bark mulch (or other floatable landscaping materials) in stormwater detention areas or other areas where stormwater runoff can carry the mulch into the storm drainage system.
c) Follow all SOPs related to irrigation, mowing, landscaping, and pet waste management.

## 3. Cleanup

a) Keep all outdoor work areas neat and tidy. Clean by sweeping instead of washing whenever possible. If areas must be washed, ensure that wash water will enter a landscaped area rather than a storm drainage inlet. Use only water for outdoor washing; do not use soap or detergents.
b) Pick up trash on a regular basis.

## 4. Documentation

a) Document any observed deficiencies for correction or repair.
b) Document training of employees.

# SOP 16.0 – Pet Waste

## 1. Preparation

a) Require pet owners to clean up pet wastes and use leashes in City parks, in accordance with Section 130-14 of the City Code. If public "off-leash" areas are designated, make sure they are clearly defined. Avoid designating public off-leash areas near streams and water bodies.
b) Require pet owners to clean up pet waste from any public place or from premises not owned or controlled by the pet owner, in accordance with Section 130-16, "*Removing of Excrement*" of the City Code.
c) Whenever practical and cost effective, install dispensers for pet waste bags and provide disposal containers at key locations, such as trail heads, parks, greenways, or where pet waste has been a problem. Provide signs with instructions for proper cleanup and disposal.
d) Inform City employees that interact with pet owners as part of their responsibilities (Police, Fire, Animal Control, etc.) about the need to keep pet waste out of the storm drains.

## 2. Process

a) Periodically, check parks, greenways, and trails for pet waste.
b) Where warranted, provide pet waste bag dispensers and disposal containers.
c) Provide ordinance enforcement, as needed.

## 3. Cleanup

a) Dispose of all collected pet waste; provide temporary storage in a covered waste container, and properly dispose of such material. The preferred method of disposal is at a solid waste disposal facility.

## 4. Documentation

a) Document problem areas for possible increased enforcement and/or public education signs.
b) Document training of employees.

# SOP 17.0 – Planting Vegetation (Trees/Shrubs)

## 1. Preparation

a) Call PENNSYLVANIA 811 at least 3 working days before any digging is performed to have the locations of underground utilities marked.
b) Dial 811 or 1-800-242-1776.
c) Decide where any excess soils will be taken.

## 2. Process

a) Dig holes; place soil near the hole so it can easily be placed back around the roots. Do not place any excavated soils in or near pavements, gutters, drainage ways, or drainage inlets.
b) Bring each plant near the edge of the hole that was dug for it.
c) Check the depth of the hole, and adjust the depth, if necessary. The depth of the hole for a tree should be as deep as the root ball, so that the top of the root ball is level with the top of the hole.
d) Carefully remove the pot or burlap bag.
e) Place the plant in the hole.
f) Backfill the hole with existing soil, compost, and fertilizer, if desired. Do not use excessive amendments. Compact the soil around the root ball.
g) Water the plant.
h) Stake the plant, if necessary, to stabilize it.

## 3. Cleanup

a) Dispose of any extra soil by lightly spreading it across an existing grassed area; or move any extra soil onto a truck or trailer. Place the soil on a tarp if there is likelihood that some of the material would be lost through openings in the bed.
b) Sweep dirt from surrounding pavement(s) into the planter area.
c) Transport spoils to a designated fill or disposal area.

## 4. Documentation

a) Document training of employees.

# SOP 18.0 – Planting Vegetation (Seeds)

## 1. Preparation

a) Call the PENNSYLVANIA 811 at least 3 working days before any digging is performed to have the locations of underground utilities marked.
b) Dial 811 or 1-800-242-1776.
c) Decide on the application rate, method, water source, and ensure adequate materials are on hand.
d) Grade and prepare the soil to receive the seed. Place any extra soil in a convenient location to collect.

## 2. Process

a) Place the seed and any cover using the pre-determined application method (and rate).
b) Lightly moisten the seed.

## 3. Cleanup

a) Move any extra soil into a truck or trailer. Place the soil on a tarp if there is likelihood that some of the material would be lost through openings in the bed.
b) Sweep dirt, seed, and any cover material from surrounding pavement(s) into the planter area.
c) Transport soil to a designated fill or disposal area.

## 4. Documentation

a) Document training of employees.

# SOP 19.0 - Snow Removal and De-Icing

## 1. Preparation

a) Do not purchase or use any de-icing chemical that contains urea or any other nitrogen-containing compounds.
b) Store de-icing material in a covered storage area or in an area where water coming off the de-icing material is collected and delivered to the sanitary sewer or reused as salt brine.
c) Slope loading area away from storm drainage inlets.
d) Design drainage from loading area to collect runoff before entering the drainage system.
e) Wash out vehicles, if necessary, in approved washout area before preparing them for snow removal.
f) Calibrate spreaders to minimize amount of de-icing material used and still be effective.
g) Provide vehicles with spill cleanup kits in case of hydraulic line rupture or other spills.
h) Train employees in spill cleanup procedures and proper handling and storage of de-icing material.

## 2. Process

a) Carefully load material into trucks to minimize spillage.
b) Periodically dry sweep loading area to reduce the amount of de-icing material exposed to runoff.
c) Distribute the minimum amount of de-icing material to be effective on pavements.
d) Do not allow spreaders to idle while distributing de-icing material.
e) Park trucks loaded with de-icing material under cover whenever possible.

## 3. Cleanup

a) Sweep up all spilled de-icing material around loading area.
b) Clean out trucks after snow removal duty in an approved washout area.
c) Provide maintenance for vehicles in covered area.
d) If sand is used in de-icing operations, sweep up residual sand from pavements when weather permits.

## 4. Documentation

a) Document training of employees.

# SOP 20.0 – Stream Maintenance

## 1. Preparation

a) Monitor streams to determine maintenance needs or respond to citizen complaints.
b) Identify areas requiring maintenance. Determine who is responsible for maintenance (City, PENNDOT, property owner, or others). If it is not the City's responsibility, notify the proper agency or property owner. If it is the City's responsibility, then proceed.
c) Check culverts and crossings periodically, or in response to citizen complaints.
d) Determine what manpower or equipment will be required.
e) Identify access and easements to area requiring maintenance.
f) Determine method of maintenance that will be least damaging to the stream.
g) Obtain necessary permits. (i.e., General or Joint Permit).

## 2. Process

a) Install erosion and sediment controls, as necessary, prior to initiation of work.
b) Maintain access to stream channels wherever possible.
c) Conduct all maintenance activities while minimizing adverse impacts to the stream.
d) Remove unwanted material (debris, branches, soil) from the stream and place it in a truck to be hauled away to an approved disposal site.

## 3. Cleanup

a) Stabilize all disturbed soils.
b) Remove all tracked sediments from paved surfaces near maintenance site, if applicable.
c) Haul all collected debris or sediment to approved dumping site.
d) Remove any temporary erosion controls.

## 4. Documentation

a) Keep a log of maintenance activities, including date, location and individuals involved.
b) Record the amount of materials removed or imported.
c) Keep any notes or comments of any problems.
d) Use "before" and "after" photographs to document activities, as applicable.

# SOP 21.0 – Transporting Equipment

## 1. Preparation

a) Determine equipment needed for transport and method (trailer, truck bed, etc.) needed to transport equipment.
b) Conduct pre-trip inspection of equipment.
c) Bring a spill kit along in the event of a fuel spill or equipment leakage.

## 2. Process

a) Load and secure equipment on trailer or truck.
b) Load and secure fuel containers for equipment usage.
c) Ensure fuel is stored away from any storm drainage structures.

## 3. Cleanup

a) Off-load equipment.
b) Store equipment and trailer in a proper location.
c) Conduct post-trip inspection of equipment.
d) Wash equipment, if needed, according to the operating procedure for Cleaning Equipment.

## 4. Documentation

a) Document training of employees.

# SOP 22.0 – Transporting Soil and Gravel

## 1. Preparation

a) Allow wet materials to dry before transporting.
b) Lightly spray dusty materials with water to keep them from blowing.
c) Be familiar with and understand the requirements, if any, for the site to/from which the materials are being hauled.
d) Determine where the truck and other equipment will be cleaned after material transport is completed.

## 2. Process

a) Cover the truck bed with a secured tarp before transporting materials.
b) Make sure not to overfill materials when loading trucks.

## 3. Cleanup

a) Sweep up any materials tracked out on the roads from the site. Do not use water to rinse them into any storm drainage structure.
b) Wash out truck and other equipment, when needed, in a designated wash area.

## 4. Documentation

a) Document training of employees.

# SOP 23.0 – Transporting Wet Excavated Materials and Spoils

**1. Preparation**

a) Utilize truck with containment for wet material.
b) Determine disposal site of material.

**2. Process**

a) Load and transport in a manner to minimize spillage and tracking of material.
b) Check truck for spillage.
c) Utilize one route of transport.

**3. Cleanup**

a) Clean route of transport to remove any spilled material.
b) Do not use water to rinse spilled materials into any storm drainage structure.
c) Wash out equipment truck and other equipment in designated wash area.

**4. Documentation**

a) Document training of employees.

# SOP 24.0 – Vehicles: Fueling

## 1. Preparation

a) Train employees on proper fueling methods and spill cleanup techniques.
b) Preferably provide a canopy or roof over fuel transfer areas.
c) Provide absorbent spill cleanup materials and spill kits in fueling areas and on mobile fueling vehicles.
d) Provide containers for disposal of contaminated cleanup materials.

## 2. Process

a) Shut off the engine.
b) Ensure that the fuel is the proper type of fuel for the vehicle.
c) Ensure nozzles used in vehicle and equipment fueling are equipped with an automatic shut off to prevent overfill.
d) Fuel vehicle carefully to minimize drips to the ground.
e) Do not 'top off' when fueling.
f) Mobile fueling shall be minimized. Whenever practical, vehicles and equipment shall be transported to the designated fueling area in the municipal yard.
g) When fueling small equipment from portable containers, fuel in an area away from storm drains and water bodies.
h) Do not smoke during fueling operations.

## 3. Cleanup

a) Immediately clean up spills using dry absorbent material (i.e., kitty litter, sawdust, etc.). Sweep up used absorbent material and properly dispose of contaminated cleanup material in an approved container.
b) Contain large spills as best as possible, and immediately notify Emergency Services.

## 4. Documentation/Records

a) Document training of employees.

# SOP 25.0 – Vehicles: Vehicle and Equipment Storage

## 1. Preparation

a) Inspect parking areas for stains/leaks on a regular basis.
b) Provide drip pans or adsorbents for leaking vehicles.

## 2. Process

a) Whenever possible, store vehicles inside where floor drains have been connected to sanitary sewer system.
b) When inside storage is not available, park vehicles and equipment in approved designated areas.
c) Maintain vehicles to prevent leaks, as much as possible.
d) Address any known leaks or drips, as soon as possible. When a leak is detected, place a drip pan under the leaking vehicle to collect the drip and the vehicle should be schedule for repairs.
e) The shop shall provide a labeled location to empty and store drip pans.
f) Cleanup all spills using dry methods.
g) Never store leaking vehicles over a storm drain inlet.

## 3. Cleanup

a) Clean up any leaks that are spilled on the asphalt using a dry absorbent; sweep up the dry absorbent and dispose of in the trash.

## 4. Documentation/Records

a) Document training of employees.

# SOP 26.0 – Vehicles: Washing

## 1. Preparation

a) City vehicle wash water shall not be disposed of into storm drains, waterways, or to the ground.
b) Preferably, City vehicles should be washed at commercial vehicle wash facilities or other locations where wash water is disposed of to a sanitary sewer.
c) Where discharge of wash water to a sanitary sewer is not feasible, then wash water must be discharged through a filtering device that is designed to remove the expected pollutants (fuels, oil, grease, heavy metals, sediment), prior to discharge to the ground or storm sewer.

## 2. Process

a) Minimize water use when washing vehicles. Use hoses with automatic shut off nozzles to minimize water usage.
b) Soaps and detergents should not be used when washing vehicles outside; water only. In the event that cleaners are necessary, only use biodegradable and non-toxic cleaners. Many cleaners are advertised as biodegradable but are toxic. An acceptable cleaner is Simple Green Concentrated Car Wash and Simple Green Car Wash and Wax.
c) When washing outside the building, it is the operator's responsibility to make sure all wash water is contained on the wash pad and flows to the filtering device.
d) Never wash vehicles where wash water flows over pavement, into a storm drain, or into a waterway.

## 3. Cleanup

a) Clean wash areas after washing use to collect any accumulated solids.
b) Maintain and clean filtering devices, as needed.

## 4. Documentation/Records

a) Document training of employees.

# SOP 27.0 – Stormwater Catch Basin Cleaning and Maintenance

## 1. Preparation

a) Clean any sediment or trash that may be present on top of grate.
b) Perform visual inspection of outside of grate area.
c) Determine if anything needs to be repaired or replaced within or around stormwater catch basin.
d) Perform visual inspection of the inside of catch basin to determine if cleaning or repairs are required.

## 2. Process

a) Clean catch basin utilizing manual or mechanical means.
b) For manual means, place removed material in a location protected from potential runoff.
c) Place spoils in vehicle for transport to disposal area.
d) Dispose of spoils in an approved location for dewatering if necessary.
e) For mechanical cleaning use a high-powered vac truck to removed sediment. When sediment is removed use a high-pressure washer to clean any other sediment out of catch basin.
f) After catch basin is clean, send the suction hose of the vacuum truck downstream to clean pipe and pull back sediment that might have moved down stream of the catch basin.

## 3. Cleanup

a) When vehicle is full of spoils take them to a contained area for drying.
b) After drying, put it into a dump truck and take it to the landfill.

## 4. Documentation/Records

a) Keep logs of the date and number of catch basins cleaned. Record employees involved with the activity.
b) Record the estimated amount of waste collected from each catch basin.
c) Keep any notes or comments of any problems.

# SOP 28.0 Street, Curb, and Gutter Maintenance, Replacement, and Construction

## 1. Description

a) Street, curb, and gutter activities include concrete and asphalt installation, maintenance, repair, and replacement; bridge maintenance; and painting and striping. Procedures involving the maintenance of streets, curbs, and gutters have the potential to impact stormwater quality. Materials involved in these activities should be used efficiently and disposed properly.

b) When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

## 2. Procedure

***GENERAL***

a) Obtain all applicable federal, state, and local permits for construction projects.

b) The National Pollution Discharge Elimination System (NPDES) permit applies to construction sites disturbing one acre or more. This must be obtained prior to performing work, when applicable.

c) Westmoreland Conservation District Erosion and Sediment Control (ESC) program requires all projects (including City projects), disturbing over 5000 square feet, to obtain a permit through the program or a waiver after a demonstration of no or minimal impact.

d) Where practicable, non-structural controls will be used, such as phased construction, dust control, good housekeeping practices, and spill prevention and response procedures.

e) Best management practices (BMPs) will be implemented as appropriate and they will be inspected and maintained in accordance with approved design criteria, manufacturer's recommendations, or industry standards.

f) Wash out mixers, delivery trucks, or other equipment in designated washout areas only.

g) Locate concrete washout, portable toilets, and material storage away from storm drain inlets.

h) Material stockpiles will not be stored in stormwater flow lines. Temporary sediment control will be used during temporary, short-term placement while work is actively occurring.

i) Protect storm drain inlets and drains with curb socks, rock berms, inlet protection, or drain covers/mats prior to any maintenance activity.

j) When saw cutting, ensure that no slurry enters the storm drain, let the slurry dry, sweep it up, and properly dispose of the sweepings.

k) Do not perform concrete or asphalt patch work during wet conditions whenever possible.

l) Leaking material containers should be properly discarded and replaced.

m) Store materials in containers under cover when not in use and away from any storm drain inlet.

n) Monitor equipment for leaks and use drip pans as necessary.

o) Sweep or vacuum the roadway once maintenance activities are complete.

***CONCRETE MAINTENANCE***

a) Minimize the drift of chemical cure on windy days by using the curing compound sparingly and applying it close to the concrete surface.

b) Ensure there is a concrete truck washout area available or require the contractor to wash out at the batch plant.

c) Whenever possible, recycle concrete rubble; otherwise, dispose of it as solid waste.

***ASPHALT MAINTENANCE***

a) Sweep to minimize sand and gravel from new asphalt from getting into storm drains, streets, and creeks.

b) Do not allow asphaltic concrete grindings, pieces, or chunks used in embankments or shoulder backing to enter any storm drain or watercourses. Apply temporary perimeter controls. Install silt fence until the structure is stabilized or permanent controls are in place.

c) Whenever possible, recycle broken asphalt. If recycling is not feasible, dispose of as solid waste.

d) Drainage inlet structures shall be covered with inlet protection during application of seal coat, tack coat, slurry seal, and/or fog seal.

***PAINTING AND STRIPING***

a) If possible, schedule painting and striping projects during dry weather.

b) Use thermoplastic or epoxy markings in place of paint whenever feasible.

c) The pre-heater for thermoplastic striping and the melting tanks used during pavement marking must be filled carefully to prevent splashing or spilling of materials. Leave six inches at the top of pre-heater and the melting tanks to allow room for material to move and splash when vehicles are deadheaded.

## 3. Employee Training

a) Train employees who perform street, curb, and gutter maintenance on this written procedure. Information regarding how to avoid and report spills will be presented during the training.

b) Periodically conduct refresher training on the SOP for employees who perform street, curb, and gutter maintenance.

## 4. Documentation/Records

a) Keep logs of the date maintenance activities were performed. Record employees or Contractors involved with the activity.

b) Keep any notes or comments of any problems encountered during the activity.

# SOP 29.0 Utility and Storm Sewer Replacement and Construction

## 1. Description

a) Procedures involving the replacement and construction of utilities and storm sewers have the potential to impact stormwater quality. Materials involved in these activities should be used efficiently and disposed properly.

b) When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

## 2. Procedure

***GENERAL - CONSTRUCTION***

a) Obtain all applicable federal, state, and local permits for construction projects.

b) The National Pollution Discharge Elimination System (NPDES) permit applies to construction sites disturbing one acre or more. This must be obtained prior to performing work, when applicable.

c) Westmoreland Conservation District Erosion and Sediment Control (ESC) program requires all projects (including City projects), disturbing over 5000 square feet, to obtain a permit through the program or a waiver after a demonstration of no or minimal impact.

d) A Chapter 105 Joint Permit may be needed if the work will be conducted in or impact waters of the Commonwealth, including wetlands, and creeks.

e) Where practicable, non-structural controls will be used, such as phased construction, dust control, good housekeeping practices, and spill prevention and response procedures.

f) BMPs will be implemented as appropriate and they will be inspected and maintained in accordance with approved design criteria, manufacturer's recommendations, or industry standards.

g) When feasible, grading activities will be scheduled during dry weather.

h) Wash out mixers, delivery trucks, or other equipment in designated washout areas only.

i) Locate concrete washout, portable toilets, and material storage away from storm drain inlets.

j) Material stockpiles will not be stored in stormwater flow lines. Temporary sediment control will be used during temporary, short-term placement while work is actively occurring.

k) Protect storm drain inlets and drains with curb socks, rock berms, inlet protection, or drain covers/mats prior to any maintenance activity.

l) When saw cutting, ensure that no slurry enters the storm drain, let the slurry dry, sweep it up, and properly dispose of the sweepings.

m) Do not perform concrete or asphalt paving work during wet conditions whenever possible.

n) Leaking material containers should be properly discarded and replaced.

o) Store materials in containers under cover when not in use and away from any storm drain inlet.

p) Monitor construction equipment for leaks and use drip pans as necessary.

q) Sweep or vacuum the roadway as needed during construction and once construction is complete.

***EMERGENCY REPAIR AND REPLACEMENT***

a) Emergency discharges are defined as situations in which it is not possible to implement all of the available BMPs due to the uncontrolled nature of the discharge. The primary focus during these events is to identify and mitigate the cause as soon as practicable following the emergency. Refer to the Spill Prevention and Response SOP for reporting requirements.

## 3. Employee Training

a) Train employees who perform construction or replacement of utilities and storm sewer on this written procedure.

b) Periodically conduct refresher training on the SOP for employees who perform construction and replacement activities.

## 4. Documentation/Records

a) Keep logs of the date maintenance activities were performed. Record employees or Contractors involved with the activity.

b) Keep any notes or comments of any problems encountered during the activity performed.

## SOP 30.0 Used Oils, Grease & Cleaners Disposal

### 1. Description

a) The improper disposal of used oil, solvents, and cleaners can lead to the degradation of local receiving water quality. Proper disposal is described in the following two ways: on-site material disposal and off-site material disposal. On-site disposal describes the procedure for temporarily storing used oil or other liquid products at a facility until they are transported off-site for disposal.

b) When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

### 2. Procedure

***ON-SITE MATERIAL DISPOSAL***

The following applies to all waste or used products temporarily stored at City facilities:

a) Used oils, solvents, cleaners, and any other liquid products should only be stored in material-appropriate containers.

b) All containers containing used products should be clearly and correctly labeled, identifying the material stored within the container.

c) Waste or used products having differing chemical compositions should not be mixed in the same storage container.

d) The chemical compatibility of waste or used products should be considered prior to storing containers. Compatibility and storage data contained in each waste or used product's MSDS should be consulted to ensure only compatible materials are stored in close proximity to each other.

e) All containers with a storage capacity greater than 15 gallons should have secondary containment. Secondary containment should provide 110% of the individual container storage volume or, if a single secondary containment is used for multiple containers, the secondary containment must provide the greater of 110% of the largest individual container or 10% of the total stored container volume, whichever is greater.

f) Any minor spills of waste or used products that occur during transfer to the storage container should be cleaned up immediately.

g) Under no circumstances should waste or used products be poured into floor drains, storm sewer inlets, or directly poured onto the ground. In addition, in the case of minor spills, free product (used oil, antifreeze, etc.) should be cleaned up using absorbent material, not washed with water.

***OFF-SITE MATERIAL DISPOSAL***

a) To the maximum extent practicable, the City of Monessen attempts to recycle or find secondary use for its waste or used products. Outside contractors are used to collect waste or used products from City facilities and either recycles, re-uses, or properly disposes of the waste or used products. **Under no circumstance should City employees transport or dispose of used oil products or other liquids off-site, unless properly authorized to do so.** In addition, records or manifests for off-site waste or used product disposal, which include the date of the pick-up, the name of the disposal company and disposal location, must be kept at the site.

## 3. Employee Training

a) Train employees whose activities include the disposal of used oil or other greases or cleaners on this written procedure.

b) Periodically conduct refresher training on the SOP for employees who perform maintenance activities that include the disposal of used oil or other materials described above.

## 4. Documentation/Records

a) Keep logs of the date maintenance activities were performed and used materials stored for disposal.

b) Keep any notes or comments of any problems encountered during the activity performed.

# SOP 31.0 Outdoor Festivals and Events

## 1. Description

a) Outdoor festivals and events operated, controlled or approved by the City have the potential to impact stormwater quality. For clarification purposes, this SOP is intended to include events for which street closure permits are issued by the City, or an event occurring on or within any City property. Potential contaminants may include trash, sewage, and organics.

For organizations (non-City) requesting street closure permits or park use approvals, the requirements as set forth in this SOP will be communicated at the time of application. Applicants granted a street closure permit or an approval for park use for an activity will be expected to follow the same procedures as if the event were City sponsored. A festival or event would meet any or all of the following criteria and include the use of any existing City owned amenities:

Portable toilets;

Trash receptacles; and

Food and beverage vendors.

When services are contracted, this written procedure should be provided to the applicant so they have the proper operational procedures. In addition, the contract should specify that the applicant is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

## 2. Procedure

***TRASH COLLECTION AND REMOVAL***

a) Provide adequate trash receptacles for vendors and guests.

b) Monitor and respond to leaking waste containers.

c) Empty trash receptacles to prevent overflow.

d) Store waste containers under cover or on grassy areas, if possible.

e) Do not wash out trash receptacles unless wash water will be discharged to the sanitary sewer.

f) Any minor spills of waste or used products that occur during transfer to the storage container should be cleaned up immediately.

g) Walk the perimeter and throughout the outdoor festival and event area during and after every event to pick up loose trash and debris. Properly dispose of this material.

h) Sweep the roadway and parking lots after the festival or event.

***PORTABLE TOILET SERVICE***

a) Portable toilets are used at most outdoor festivals and events. All portable toilet waste is classified as septage. The City will use a licensed waste hauler to dispose of their waste for any outdoor festival or event that has portable toilets. The units will be removed as soon as the festival or event is completed so that they do not become a nuisance or vandalized.

***FOOD AND BEVERAGE VENDOR WASTE***

a) Waste generated by food and beverage vendors is regulated by State and Federal Rules and Regulations.

## 3. Employee Training

a) Train applicable employees who perform trash collection and street sweeping and issue leases/permits for outdoor festivals and events on this written procedure.

b) Periodically conduct refresher training on the SOP for employees who perform maintenance activities and cleanup of the materials described above.

## 4. Documentation/Records

a) Keep logs of the date maintenance activities were performed.

b) Keep any notes or comments of any problems encountered during the activity performed.

# SECTION 5

TARGET AUDIENCE LIST
LIST OF BUSINESSES
UPDATED 2023

# MS4 Target Audience - Businesses

*Reviewed and updated March 31, 2023*

1. The Arte of Framing
2. Monessen Florist
3. His Place – Community Coffee Shoppe
4. Nationwide Medical, Inc.
5. By George Restaurant
6. Kristen's Beauty Salon
7. Franks Service Garage
8. La Eda's Restaurant and Bar
9. Great Dane Realty
10. Hair Design by Anthony J. Sambuchini
11. Jules Auto Service
12. Dzimiera Flour Company, Inc.
13. Ric's Kustom Polishing
14. Pidich Auto Service
15. Bart's BP Gas Station
16. Bailey's Diner
17. Monessen School District
18. Knights of Columbus
19. Monessen Elks Lodge 773
20. Domenico's on Grand
21. Armando's Pizza
22. Lucchesi's Restaurant
23. Douglas Education Center
24. Douglas School of Business
25. Cleveland-Cliffs Monessen Coke Works
26. Alumisource
27. Sunoco Gas Station
28. Eastgate Sunoco
29. Keystone Bakery
30. Professional Auto Wash

# SECTION 6

## ILLICIT DISCHARGE DETECTION & ELIMINATION OUTFALL SCREENING REPORT 2018

(No Change: As submitted in September 2018)

# Illicit Discharge Detection and Elimination Outfall Screening

## Spring 2018 Inspection

**Conducted For:**

City of Monessen
557 Donner Avenue
Monessen, PA 15062

**Prepared by:**

WEC, Inc.
1370 Washington Pike,
Suite 304
Bridgeville, PA 15017

**June 30, 2018**

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APPENDICES:

Appendix A: MS4 Outfall Mapping

Appendix B: Outfall Screening Reports with Photographs

Monongahela River
UNT#1 to the Monongahela River (Grand Boulevard)
UNT #2 to the Monongahela River (Tyrol Boulevard)
UNT to Speers Run (State Road)

# EXECUTIVE SUMMARY

During the summer of 2018, WEC Inc. (WEC) assisted the City of Monessen with inspecting the outfalls in the City's municipal separate storm sewer system (MS4) for potential illicit discharges. Following the Illicit Discharge Inspection protocol that was previously implemented in 2016, WEC inspected all of the approximately 47 MS4 outfalls identified in the City. The inspections consisted of a visual screening of any dry-weather flow that was present. The inspections revealed 6 outfalls with evidence of potential illicit discharges.

# BACKGROUND

## Purpose

Under of the National Pollutant Discharge Elimination System (NPDES) Permit No. PAG136283 ("permit"), the City of Monessen is required to conduct ongoing dry weather field screening of all outfalls during the term of the permit to detect potential illicit discharges.

Under the MS4 permit, an outfall is defined as "the point at which storm water is discharged to waters of the state or leaves one municipality and enters another." The MS4 is defined as "a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

1. Owned or operated by a municipality.
2. Designed or used for collecting or conveying storm water.
3. Which is not a combined sewer conveying both sanitary and storm water."

When applied to the City of Monessen, the MS4 permit requires ongoing screening of the road ditch or storm sewer outfalls where the outfalls discharge to a water of the commonwealth (i.e., a navigable or non-navigable stream, lake, or wetland) or where they discharge into an adjacent municipality or to a county or state highway right-of-way.

WEC assisted the City of Monessen with developing and implementing an annual screening program beginning in 2016.

## Outfall Identification and Mapping

In 2016, the City of Monessen identified major and minor outfalls within the city as part of the MS4 mapping process required by the permit. Outfalls were identified at the locations where the City's MS4 discharged to a water of the state, to an adjacent municipality, or outside the permitted area. Approximately 13 outfalls were identified during this process in 2016. (The number has since changed, due to work performed by the Mon Valley Sewage Authority, additional investigation of all the unnamed tributaries within the City, as well as the reevaluation of existing outfalls.)

Topographic information was also used to define approximate drainage basins for each outfall. Based on this information, each outfall was classified as "major" or "minor." A "major outfall," as defined by the MS4 permit, is an MS4 outfall that meets one of the following criteria:

1. A single pipe with an inside diameter of 36 inches or more or equivalent conveyance (cross sectional area of 1,018 square inches) which is associated with a drainage area of more than 25 acres.
2. A municipal separate storm sewer system that receives storm water runoff from lands zoned for industrial activity that is associated with a drainage area of more than 2 acres or from other lands with 2 or more acres of industrial activity, but not land zoned for industrial activity that does not have any industrial activity present.

Outfalls not meeting the definition of a major outfall are considered "minor outfalls."

When necessary, field verification was used to determine outfall sizes or drainage patterns. The current outfall map includes 17 major outfalls and 30 minor outfalls. These numbers are updated each year as outfalls are located during the ongoing field screening program and modifications are made to the MS4. Mapping showing the MS4 outfalls has been included in Appendix A.

## Development of Annual Screening Program

The MS4 permit requires municipalities to develop an annual screening program and submit it to the PADEP. The ongoing screening program was to include provisions to include all outfalls (major and minor) annually during the 5-year permit cycle. In developing the program, consideration was to be given to the hydrological conditions, total drainage area, population density, traffic density, age of the structures or buildings in the area, history of the area, and land use types.

Based on the MS4 permit requirements and other information obtained from PADEP, WEC developed a proposed screening program for the City of Monessen. The proposed screening program results were presented to the City in the **CITY OF MONESSEN 2016 OUTFALL SCREENING REPORT** (November 23, 2016). WEC conducted the first round of screening inspections during the summer/fall of 2016.

## Screening Methodology

Outfalls that have been previously inspected are located with the assistance of GPS. For outfalls that have not been previously inspected, the available MS4 mapping is used to physically locate the outfall, and then the GPS location is recorded to assist with future inspections. The physical properties of the outfall are then recorded – type of outfall, dimensions, material, and discharge location. A photograph of the outfall is taken to show the general location and configuration.

After the physical properties have been recorded, the outfall and surrounding area are screened for indicators of current or past illicit discharges. Sample indicator parameters include floatable material, gross solids, odors, stains, color of water, turbidity, abnormal vegetation and benthic growth. If any of these physical indicators are observed, they are further described and quantified. A close-up photograph is taken of the actual discharge of the outfall, showing any indicator parameters or flow from the outfall.

The MS4 permit specifies that the outfalls be screened during periods of dry weather. Outfall inspections are typically conducted in the summer months to avoid the effects of snowmelt runoff in the storm sewer system. WEC generally waits for a minimum of 72 hours following a runoff-producing rainfall event to conduct the outfall screening. This typically allows sufficient time for the stormwater to discharge through the drainage area and outfall. If, after 72 hours, the outfall still has flow, a sample is collected and screened for chemical indicators of an illicit discharge.

In some cases, outfalls can be either partially or fully submerged. A partially submerged outfall is an outfall where the elevation of the invert is below the water level of the receiving water. A fully submerged outfall is a pipe that is entirely below the water surface. In either condition, the receiving water is "backed up" into the discharging pipe or channel and is not free-flowing. Under these conditions, if a sample is collected at the outfall point, the sample could consist almost entirely of the receiving water.

In the case of partially or fully submerged outfalls, WEC developed a screening procedure that was approved by PADEP. The submerged outfall is screened for physical indicators. However, a flow sample, if necessary, is collected from the first access point (i.e., manhole, catchbasin, curb inlet) upstream of the outfall. This reduces the influence of the receiving water. Typically, if there is no flow or pooled water at the upstream location, then no sample is collected. For all upstream sampling, a note is made of the distance and land use of the area between the outfall and the upstream area to assess the potential for illicit connections between the outfall and the upstream location.

In the event that the physical or chemical indicators show that there is a potential ongoing illicit discharge, the MS4 Coordinator of the municipality is contacted. If requested, WEC then assists the municipality with attempting to identify the source of the discharge, usually by inspecting and/or sampling additional upstream points to attempt to isolate a particular branch of the MS4 network.

While not explicitly required by the MS4 permit, WEC also conducts a physical condition assessment for each outfall. The inspector identifies any apparent damage or erosion present at the outfall. This information is provided to the municipality to assist with maintenance activities.

A MS4 Outfall Screening Report provided by the PADEP is generated for each outfall that is inspected. The outfall report includes the general outfall information that was collected, along with detailed inspection results for each inspection conducted at the outfall. This provides a comprehensive history of the inspection results for the outfall as multiple inspections are performed over the life of the outfall. Detailed inspection reports and photos for each outfall are included in Appendix B. Some general observations from the field screening are noted in the following sections.

### Flow

To meet the requirement of dry weather screening, outfalls were typically screened at least 72 hours after the previous runoff-producing rainfall event. If dry weather flow was found during the field screening, a sample was collected and analyzed for the presence of indicator parameters. The analysis conducted is discussed in a later section.

Not all flow is an indicator of an illicit discharge. Following a significant rainfall event, surface water and groundwater elevations can be higher than normal. Much of the observed flow may originate from sump pump discharges, detention basin discharges, permitted discharges, and infiltration into the storm sewer system.

### Submerged Outfalls

Some of the outfalls in the City were located at or below the normal levels of their respective receiving waters. Of the 47 inspected outfalls, 14 were partially to totally submerged.

## PHYSICAL INDICATOR ASSESSMENT

All outfalls, regardless of whether they exhibited dry-weather flow at the time of inspection, underwent an extensive assessment for physical indicators of past or current illicit discharges. The physical indicators are grouped into eight categories, and each category is assigned a severity rating based on the observed conditions, along with a qualitative description, if applicable. The eight categories of physical indicators are described below.

### Floatables

Floatables include petroleum sheens, suds, algae, and evidence of raw sewage. These conditions would typically be observed in an area of stagnant water, such as a downstream pool or an upstream manhole, although some may be observed in the actual flow. Some conditions (petroleum sheens and sewage) are almost always the result of an illicit discharge. Other floatables, like suds and algae, can have non-illicit sources, but their presence can also indicate the potential for an illicit discharge, and the source should be traced.

Vegetative debris and solid waste (litter) can also float, but these substances are included in the *Gross Solids* category and are not considered floatables. A *slight* severity for floatables indicates isolated occurrences of the substance in the pool or flow. A *moderate* severity indicates a broader coverage, including distinct pockets of the substance. A *severe* classification typically describes total coverage of the water surface.

## Odor

Clean stormwater should have no odor. Odors may be caused by the presence of chemicals, which can indicate a potential illicit discharge. The classification of odor is somewhat subjective and may vary depending on the inspector. Some of the odor classifications are chemical-based, and include petroleum, VOC/solvent, chlorine, and sulfur. Other odor classifications are even more subjective, and include musty, fishy, sewage, and fragrant.

Odor can be difficult to quantify. As a result, the severity is based on the method that it can be detected. A *slight* severity for odor indicates that the odor can be detected in the sample bottle. A *moderate* severity indicates that the odor can be detected in the flow itself. A *severe* classification indicates that the odor can be detected from a distance.

## Turbidity

Turbidity is a measure of the clarity of a water sample, reflecting the amount of suspended solids present in the water. As turbidity increases, the water becomes cloudy and eventually opaque. Turbidity has a negative impact on aquatic life, as it prevents sunlight from penetrating the water.

Turbidity is frequently caused by soil erosion that occurs upstream of the outfall. The soil erosion can be accelerated by poor erosion control management practices. Active construction sites and highly eroded areas are common sources of turbidity.

While turbidity can be measured directly using an instrument like a turbidimeter, the relative turbidity of each outfall sample was assessed qualitatively. A *slight* severity for turbidity indicates that the sample appeared slightly cloudy in the sample bottle. A *moderate* severity indicates that the sample exhibits significant cloudiness. A *severe* classification was used for a sample that was opaque in the sample bottle.

## Color

Stormwater typically should be clear, with no apparent color. Certain tints and colors can indicate the presence of substances that could be a potential illicit discharge. Some tints can be caused by natural substances, such as tannins in leaves and vegetative debris causing a slight brown tint. High concentrations of suspended solids can cause orange tints (clay), brown tints (loam) or gray-black tints (organic materials). Certain colors (i.e., red, blue and green) are almost never naturally-occurring, and likely indicate an illicit discharge.

Color is most easily assessed in the sample bottle. The sample bottle can be compared to a bottle of deionized water as a standard. The general color of the sample is noted, along with the relative severity. A *slight* severity for color indicates that the color is faint in the sample bottle. A *moderate* severity indicates that the color is easily detected in the sample bottle. A *severe* classification indicates that the color can be observed in the actual flow or pool, outside of the sample bottle.

## Vegetation

The health of the vegetation in the area surrounding the outfall can be an indicator of potential illicit discharges from the outfall. Various chemicals in an illicit discharge can inhibit or kill the vegetation in the areas surrounding the outfall. Discharges with high nutrient levels – particularly fertilizer runoff – can significantly increase the amount of vegetation around the outfall.

Because outfalls provide a water source, the vegetation around outfalls is typically more productive than areas farther from the outfall, particularly during dry periods. It is important to distinguish between increased vegetation due to available water and excessive vegetation due to nutrients in the runoff. True vegetation impacts due to chemicals or nutrients appear to be rare compared to other physical indicator parameters.

The "vegetation" indicator parameter does not apply to vegetation growing inside the outfall pipe or on the pipe apron. This condition is evaluated under the "benthic growth" parameter.

Vegetation effects were classified as either "inhibited" or "excessive." The severity was subjectively assigned based on the extent of the vegetation impact that was observed, ranging from *slight* to *severe*.

## Benthic Growth

Benthic growth can occur due to the presence of nutrients, organic materials and moisture. As a result of these conditions, outfall pipes and aprons can commonly host vegetation that grows on the sides and bottoms of the structures. This is particularly common in concrete pipes, which are more porous, but can occur on nearly all pipe materials. The vegetation encountered is typically algae, moss and lichens.

Some degree of benthic growth is present on nearly all storm sewer outfall pipes, and appears to increase with age. The presence of benthic growth alone is not typically a reason to classify an outfall as a potential illicit discharge. However, severe cases of benthic growth, especially when combined with other indicators, can be used to classify and trace illicit discharges.

The color of the benthic growth is noted on the inspection report. Green benthic growth is most common in outfalls with sunlight. Brown benthic growth is more common in outfalls with limited sunlight. Other colors, such as orange, can sometimes be present.

The severity of the benthic growth is determined by a subjective analysis of the thickness of the vegetation. A *slight* severity for benthic growth indicates a thin layer, usually a film or the dried stains of former growth. A *moderate* severity is used when an actual depth of vegetation can be observed, typically up to one-half inch deep. A *severe* classification is used when the vegetation changes from a short, "fuzzy" layer to longer, more defined plants with stems and leaves.

## Stains

Stains inside pipes, aprons, riprap and channels can be good indicators of past illicit discharges. Clean stormwater typically would not cause stains. However, some non-illicit discharges can cause stains, including tannins from vegetation (brown), road salt (white), minerals (various colors) and suspended solids (gray or brown). Most storm sewer pipes will have some degree of staining due to natural causes, and the stains tend to increase with the age of the structure. These stains are typically found at either the normal or the high flowline for the pipe.

Abnormal stains are typically indicators of past illicit discharges. Common types of stains in this category include oil and grease, paint, concrete washout, and iron discharges (rust). It is important to distinguish between actual iron discharges and normal pipe corrosion, which can occur in metal pipes, and is not an illicit discharge. Corrosion typically occurs along the invert of the pipe, where water may collect and corrode the pipe. Rust stains are typically darker streaks, often originating from a lateral or other incoming pipe. Stains are useful indicators, since they tend to be persistent, and can often be used to trace the flow path upstream to a source, even after the original illicit discharge has ended. By screening outfalls on a regular basis and documenting the stains with photographs, it is possible to compare the severity of the stains to determine if a discharge is ongoing.

Stains are classified according to the type of stain present (i.e., oil, paint, rust, etc.), as well as their relative severity. The severity is subjectively assigned based on the extent of the staining that was observed, ranging from *slight* to *severe*. Because of the subjective nature of this rating, photographs are extremely helpful for documentation.

## Gross Solids

The *Center for Watershed Protection* adopted the concept of Gross Solids in regards to illicit discharge detections. Gross solids are materials that are larger than fine solids (silt and clay) and coarse solids (fine sand, fine gravel, and detritus). Gross solids consist primarily of *litter* (human derived trash larger than 4.75 mm), *organic debris* (leaves, branches, seeds, twigs and grass clippings larger than 4.75 mm), and *coarse sediments* (inorganic breakdown products from soils, pavement or building materials greater than 0.075 mm).

The type of gross solid most frequently encountered during outfall inspections appears to be litter (garbage). These materials typically enter the storm sewer from an upstream catchbasin or inlet. Paper, plastic and foam are frequently encountered in manholes, where they can become trapped as they float on the surface. These materials can also travel down storm sewer pipes and swales, ultimately discharging at the outfall.

Vegetative debris, including leaves and grass clippings, can also enter the storm sewer through catch basins and inlets and travel to the outfall. As with litter, an attempt is made to determine if the vegetative debris traveled through the storm sewer or was deposited at the outfall in another manner.

Coarse sediment is encountered less frequently than litter and vegetative debris. Most of the sediment encountered during outfall inspections is fine sediment that travels through the storm sewer and is deposited at the outfall. This sediment is included in the "Deposition" category of the Physical Condition Assessment on the report, and the sediment depth is recorded. Sediment is typically only considered a Gross Solid physical indicator parameter if it appears that the sediment was illicitly dumped into the storm sewer through a catchbasin, inlet or manhole.

Gross solid severity is similar to the method used for floatables. A *slight* severity for gross solids indicates isolated occurrences of the substance in the pool or flow. A *moderate* severity indicates a broader coverage, including distinct pockets of the substance. A *severe* classification typically describes total coverage of the water surface or manhole.

## Observed Conditions

The presence of any physical indicators in the pipe or channel, flow, downstream pool, and surrounding area were recorded at the time of the inspection. Certain physical indicators, such as color and turbidity, can only be evaluated if flow or downstream pools are present. (Because the inspection criteria for physical indicator parameters have evolved over the past several years, some of the parameters included in the current year's inspections may not have been evaluated in previous years, and those parameters may appear as blank or missing data on earlier reports.)The presence of one or more physical indicator parameters does not necessarily indicate that an illicit discharge is occurring or has occurred in the past. Certain physical indicators, such as the presence of solid waste or oil sheens in the flow, strongly suggest an illicit discharge has recently occurred. Other indicators, such as staining of the pipe or channel, may indicate that an illicit discharge occurred in the past, although the exact time is not known. Still other physical indicators may have natural or non-illicit causes, and the presence of these parameters alone should not be the grounds for assuming an illicit discharge.

Physical indicators can also be valuable aids when tracing a suspected illicit discharge upstream to the source. Certain physical indicators – pipe and channel stains in particular – are persistent and can be used to trace the flow well after the actual flow has stopped.

Benthic growth (green and/or brown) and flowline stains were prevalent at many of the outfalls. These conditions are fairly common and are not typically considered strong indicators of recurring illicit discharges unless they are particularly severe or occur in conjunction with other indicators.

# POTENTIAL ILLICIT DISCHARGES

After examining the presence of physical indicators at each outfall located throughout the City, each outfall was assigned one of the following classifications, in order of increasing likelihood of the presence of current or past illicit discharges:

- Unlikely – no significant physical or chemical evidence of current or past illicit discharge
- Potential – presence of physical and/or chemical indicators, but no strong visible evidence
- Obvious – visible and/or strong chemical evidence of current or past illicit discharge

Of the 47 inspected outfalls, 41 were classified as unlikely, 3 were classified as potential, and 3 were classified as "obvious." The outfalls that were classified as anything other than "unlikely" are summarized in the table below and discussed in more detail in the following sections. A map showing the locations of these outfalls is included in Appendix A.

**Table 3 – Outfalls with elevated illicit discharge classifications**

| Outfall | Classification | Reason |
|---|---|---|
| #19 – UNT#1 | Potential | Benthic growth, mild sewage odor |
| #5 – UNT#2 | Potential | Mine Drainage from upstream watershed, orange precipitate, sulfur odor |
| #1 – UNT#2 | Obvious | Mine Drainage from upstream watershed, milky white precipitate |
| CS003 | Obvious | Strong sewage odor and steam over water |
| CS004 | Obvious | Strong sewage odor present |
| New Outfall C | Potential | Hose coming from Mill property pumping water directly into river via a submerged outfall |

# OUTFALL CONDITION ASSESSMENTS

While not required for the illicit discharge field screening, WEC inspectors noted the presence of any structural damage, significant deposition or erosion, or graffiti at the outfalls. This information can be passed along to the appropriate personnel for any necessary maintenance action by the City of Monessen.

## Damage

Two outfalls showed signs of damage that may require attention in the near future. One case involved the separation of pipe end section, while the other consisted of a brick culvert where the invert was eroded away. Please refer to Table 4 below for their locations and the issues identified above:

**Table 4 – Outfalls with containing significant damage**

| Outfall | Classification | Reason |
|---|---|---|
| New Outfall E | Obvious | Bottom of brick pipe eroded away |
| #17 – UNT#1 | Obvious | End section of concrete pipe broke away from mainline section |

## Erosion/Deposition

There were several areas of erosion and/or sediment deposition observed near thirteen of the outfalls screened under the 2018 screening program. Please refer to Table 5 below for their locations and the issues identified.

**Table 5 – Outfalls with erosion or sediment deposition concerns**

| Outfall | Classification | Reason |
|---|---|---|
| CS006 | Obvious | Deposition at outfall |
| CS101 | Obvious | Deposition at outfall |
| New Outfall A | Obvious | Mild erosion with deposition at outfall |
| New Outfall E | Obvious | Invert of brick pipe badly eroded, severe erosion at outfall |
| SS002 | Obvious | Mild erosion at outfall (outlets high on the bank) |
| SS003 | Obvious | Mild erosion at outfall (outlets high on the bank) |
| SS005 | Obvious | Moderate erosion at outfall (outlets high on the bank) |
| SS006 | Obvious | Moderate erosion at outfall (outlets high on the bank) |
| SS007 | Obvious | Mild erosion at outfall (outlets high on the bank) |
| UNT#1 - 002 | Obvious | Deposition of sediment at outfall |
| UNT#1 - 013 | Obvious | Deposition of sediment at outfall |
| UNT#2 - 006 | Obvious | Deposition of riprap installed by PennDOT at outfall |
| UNT#2 - 007 | Obvious | Deposition of sediment at outfall |

# CONCLUSION

WEC assisted the City of Monessen with the ongoing screening of the MS4 outfalls, as required by the MS4 permit. A total of 47 outfalls were screened, along with upstream monitoring locations when necessary. Of those 47 outfalls, 41 exhibited unlikely potential of past illicit discharges, 3 were classified as "potential," and 3 were classified as "obvious."

Those outfalls classified as "potential" or "obvious" should be given special attention in the annual screening program and a solution to remove or treat any illicit discharge must be implemented.

## STANDARD OF CARE

The conclusions presented in this report were arrived at using generally accepted engineering practices. The conclusions presented herein represent our professional opinions, based on data collected at the time of the inspections, at the specific inspection locations discussed in this report. Conditions at other locations in the City or at different times may be different than described in this report. The scope of this report is limited to the specific project and the inspection locations described herein.

Prepared By: _____

John M. Casagranda
*Environmental Specialist*

Reviewed By: _____

Robert A. Nedzesky, P.E.
*Municipal Engineer*