



Good Housekeeping/Pollution Prevention Program Manual

**Programmatic Overview of Salem's
Good Housekeeping/Pollution Prevention Practices**

City of Salem, Virginia

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APPENDICES

APPENDIX A: Points of Contact

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APPENDIX D: Knowledge Check Quiz

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ACRONYMS

BMP	Best Management Practices
CCA	Chromated Copper Arsenate
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
FLB	Fluorescent Light Ballasts
HID	High Intensity Discharge
City	City of Salem
MCM	Minimum Control Measure
MS4	Municipal Separate Stormwater Sewer System
MSDS	Material Safety Data Sheets
MVAC	Motor Vehicle Air-Conditioning
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated Biphenyls
PCP	Pentachlorophenol
RCRA	Resource Conservation and Recovery Act
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plan
TCLP	Toxicity Characteristic Leachate Procedure
VSMP	Virginia Stormwater Management Program

1.0 INTRODUCTION AND PURPOSE

City staff engage in a variety of activities that have the potential to influence water quality. This manual presents the standard protocol which the City of Salem (City) will utilize to implement its Good Housekeeping/Pollution Prevention Program. The manual provides a set of written procedures and Best Management Practices (BMPs), which are meant to ensure that City operations are managed in ways that will minimize pollutants from entering 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 Salem's MS4 General Permit (MS4 Permit), the permitting mechanism designed to prevent pollutants from entering water bodies through stormwater runoff. The MS4 Permit authorizes stormwater discharges from MS4s to surface Waters in urbanized areas of the Commonwealth of Virginia.

The MS4 program is part of the National Pollutant Discharge Elimination System (NPDES), which is authorized through the Clean Water Act (See Figure 1). With delegation from the Environmental Protection Agency (EPA), MS4 permits in Virginia are issued through the Virginia Pollutant Discharge Elimination System (VPDES) and administered by the Virginia Department of Environmental Quality (DEQ). To ensure compliance with Good Housekeeping/Pollution Prevention requirements of the MS4 Permit, the City is required to perform the procedures outlined in this manual.

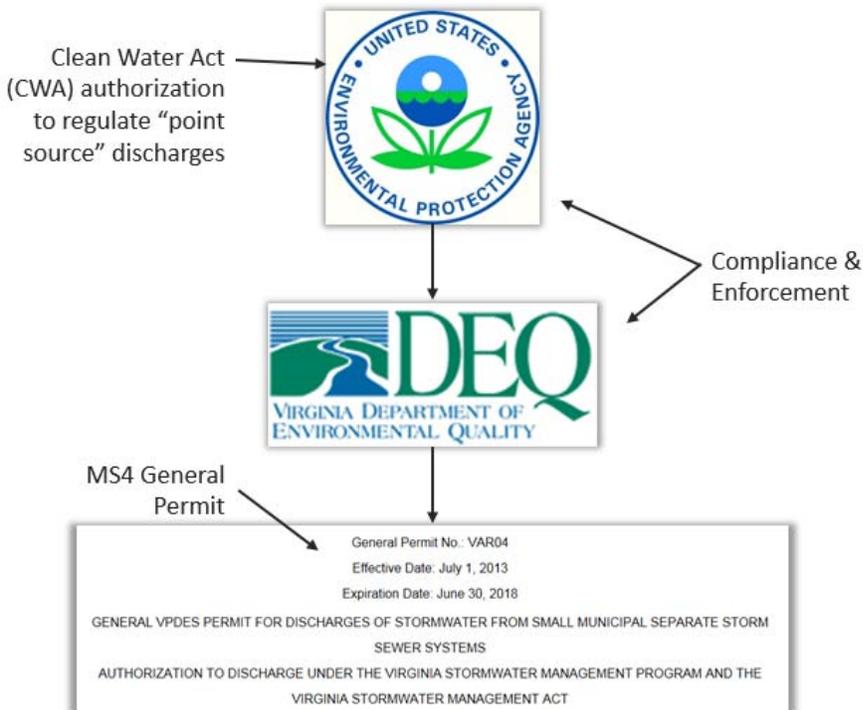


Figure 1. Generalized depiction of the regulatory framework for the MS4 permit.

The City's Good Housekeeping Program includes four distinct components:

- **Training** – Schedules and materials to train applicable field personnel related to the IDDE Program are discussed in Section 2.0 of this manual.
- **Site-Specific Stormwater Pollution Prevention Plans** – Site-specific plans intended to address water quality concerns at City properties that have high potential to contribute pollutants to surface waters are discussed in Section 4.0 of this manual.
- **Documentation and Reporting** – Procedures to document all efforts related to the Good Housekeeping/Pollution Prevention process are outlined in Section 5.0 of this manual.
- **General Maintenance & Operational Procedures** – Procedures for daily maintenance and operational activities observed in the City are outlined in Section 6.0 of this manual.
- **Waste Management & Disposal Procedures** – Procedures for waste management and disposal of pollutants are outlined in Section 7.0 of this manual.

2.0 GOOD HOUSEKEEPING TRAINING PROGRAM

The City's MS4 Program Plan requires the City conduct, or have provided, **annual training** to applicable field personnel identified by the City Engineer who play a role in the recognition and reporting of Good Housekeeping/Pollution Prevention. As part of the City's Program, this manual serves as training material for annual training to meet the permit requirement. Note that training is also required for the Illicit Discharge Detection and Elimination (IDDE) Program 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 Good Housekeeping/Pollution Prevention Program that helps the City achieve MS4 Permit compliance. However, implementation and documentation of the procedures are critical for achieving the Good Housekeeping/Pollution Prevention Program **goal to eliminate non-stormwater discharges** to the City's storm sewer system and ultimately receiving waters. These written procedures are to serve as guidance to all City-owned properties and operations that do not currently utilize a site-specific SWPPP. The following City-owned properties subject to a site specific SWPPP include:

- The City's Solid Waste Transfer Station
- The City's Streets and General Maintenance Facility



Figure 2. This manual aims to prevent pollutants from entering stormwater conveyances and ultimately receiving waters.

As referenced throughout this manual, the Good Housekeeping/Pollution Prevention Program relies on supplemental materials to assist with implementation and documentation of the Good Housekeeping/Pollution Prevention Program. Applicable field personnel identified for Good Housekeeping/Pollution Prevention training should be familiar with each Section of this Manual and the supplemental materials provided in the Appendices of this Manual, which include:

- **Points of Contact for Reporting** – Provides a list of contact information for Good Housekeeping/Pollution Prevention issues, such as reportable spills. The guide is located in Appendix A.
- **Contractor Oversight Form** – Used for oversight of contractors performing work on City property and is required to be completed bi-weekly when the work has the potential to contaminate stormwater. The form is provided in Appendix B.
- **Good Housekeeping/Pollution Prevention Training**– Appendix C and D are intended for use by the City Engineer, or designee, for training documentation purposes. For the applicable field personnel identified in Appendix D, the following is required to be completed each year:
 - Attend training session. The session will be scheduled by the City Engineer, or designee, with proper notice provided to each applicable field personnel.
 - Completion of the ‘Knowledge Check’ quiz in Appendix C at the completion of the training session. The quiz will be provided to the trainer at the end of the training session for documentation of completion and a measure of assessing the effectiveness of the training.

In addition to the documentation above, the City will incorporate and reference the **Nutrient Management Plan (NMP)** into training. This plan includes conservative practices for the use of nutrients such as fertilizer to effectively provide nutrients to plants while protecting against adverse effects.

3.0 STORMWATER POLLUTION PREVENTION PLANS

Under the MS4 Permit, the City is required to develop and implement a stormwater pollution prevention plan (SWPPP) for City-owned identified as having a high potential for exposing pollutants to the MS4. However, activities performed by City employees or contactors throughout the City could also potentially introduce pollutants to surface waters. Once these areas and activities are identified, staff can be more aware of potential sources of pollutants and implement practices to minimize or eliminate them from entering the storm sewer.

3.1 Defining an Illicit Discharge

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; and 4) discharges from pollutants from specific source areas and operations known as “generating sites.”

For the purposes of the City’s Good Housekeeping/Pollution Prevention 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 Administration Code and determined not to be a significant contributor of pollutants to the MS4.

Most sources of an illicit discharge in the City are likely to originate from a generating site or activity, such as a vehicle washing area or 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. Some may originate from the activities of a citizen instead of a municipal activity and should be reported using the contact information in Appendix A.

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 a significant contributors of pollutants and are not considered illicit discharges. If there is uncertainty of the source or constituents within an observed discharge, the City Engineer should be contacted immediately so a determination can be made.

Table 2. Examples of sources that are not an illicit discharge.

• 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 Illicit Discharge Detection and Elimination Program Manual*.

3.2 Awareness during Daily Activities and Operations

Potential illicit discharges can be identified and removed prior to entering the storm sewer with the identification and appropriate follow-up of pollutants exposed to precipitation, and subsequently stormwater runoff. The City maintenance and operations employees are in the best position to identify these pollutants, such as those 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 City Engineer or designee.

<u>Observation</u>	<u>Action</u>
Uncovered dumpster	→ Cover dumpster
Uncovered container	→ Store container indoors
Oil/hydraulic fuel on ground	→ Clean & dispose of properly

Figure 3. Example daily observations and subsequent actions can prevent an illicit discharge.

4.0 REPORTING PROCEDURES

The City maintenance and operations employees are the first line of defense for preventing sources that could contribute to an illicit discharge. 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 previously occurred. In this case, the employee needs to report the concern to the City Engineer or designee within 1 business day, who will then document the report.

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 reports from 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, or by other means. The City stormwater webpage directs these individuals to contact the City Engineer or designee, who will subsequently perform, or have performed, the appropriate follow-up action and provide documentation. If an employee is otherwise notified, the appropriate action should be taken and the City Engineer or designee shall be notified. Figure 4 summarizes this procedure.

VDOT, the City of Roanoke and Roanoke County have interconnected MS4's with the City, meaning there is stormwater being conveyed to and from the City property. Any report from either interconnected MS4 of a potential illicit discharge originating from the City should be immediately directed to the City Engineer or designee for investigation and documentation.

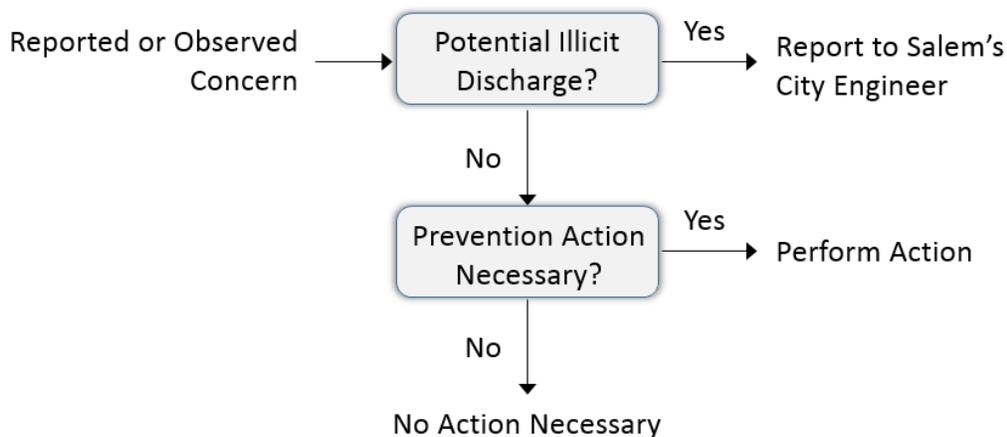


Figure 4. Reporting procedures for the City field staff.

5.0 GENERAL MAINTENANCE & OPERATIONAL PROCEDURES

The following sections review common procedures and operations that take place at specific locations in the City. These operations may be potential sources of pollutants that can enter and contaminate the stormwater system and the receiving downstream waters. An overview of risk factors associated with each operation is provided, in addition to suggested Best Management Practices to help reduce the potential for contamination.

5.1 Vehicle Washing

Overview

Improper vehicle washing can introduce a number of compounds into the MS4, including solvents, grease, sediment, and petroleum products as point source pollution (illicit discharge). Washing vehicles near any part of the MS4, including ditches or other conveyances that lead to the storm sewer, may cause these compounds to pollute a nearby water body. In order to avoid this, wash vehicles away from the storm sewer system and areas such as mixing pads, staging areas, or other surfaces where vehicle washing is not permitted.

Best Management Practices

- Wash in designated wash bays that drain directly to the sanitary sewer
- Use commercial car washes for typical fleet vehicles
- Wash vehicles on pervious surfaces, such as grass or gravel (only with water- no soap, detergents, waxing, etc.)

5.2 Vehicle Maintenance

Overview

Vehicle maintenance practices involve a number of solvents, petroleum products, and other toxic compounds that must be stored and handled in accordance with procedures that prevent potential contamination of the MS4 or associate water bodies.

Best Management Practices

For general maintenance:

- Vehicles shall be maintained inside and under cover, with the exception of emergency maintenance not involving fluids.
- Vehicles that are leaking any fluids shall be put inside and under cover unless a drip pan can be utilized and emptied into the designated hazardous waste containers.
- Water used for tire leak detection or other process shall be disposed of in the sanitary sewer only.
- Remove leaking vehicles from service until repaired.
- Store leaking batteries in a secondary container.
- Use detergent-based or water-based cleaning systems instead of organic solvents and degreasers.

For vehicle and equipment fueling:

- Always fill tanks and containers in such a manner as to avoid dripping
- Avoid “topping off” or filling beyond the normal fill capacity
- Fueling shall be supervised and never left unattended
- Fuel vehicle and equipment on a hard surface, down gradient and at the farthest practical distance from any storm drain, conveyance, or water body.

For leaks, drips, and spills:

- Clean thoroughly and promptly.
- Apply absorbent on the spill area and dispose of the waste properly. Never hose down the affected area.
- Prevent fluids from entering the storm sewer by diverting any flows

5.3 Vehicle Storage

Overview

Vehicles are stored in the City due to seasonal operations (snow removal), infrequent use, etc. Vehicles are potential sources of pollutants into the MS4 and other bodies of water, and therefore must be stored appropriately.

Best Management Practices

- Store vehicles inside or under cover, if possible.
- If vehicles must be stored outside, locate vehicles away from storm drains should leaking occur.
- Vehicles that are leaking any fluids should be put inside and under cover unless a drip pan can be utilized and emptied into the designated hazardous waste containers.
- Ensure that the streets and parking areas are free of sediment and debris. Street sweep or clean as required.
- Regularly inspect vehicle storage areas.
- Clean up any observed spills and address the source of the leaking pollutant(s).

5.4 Fueling Areas

Overview

the City utilizes a number of vehicles for operations and maintenance, in addition to other gas-powered equipment. Fuel for fleet vehicles and equipment presents a particularly hazardous set of toxic compounds that can seriously impair the water quality of receiving water bodies if spilled or leaked. Extra care must be taken to ensure that staff are adequately trained to avoid spills, clean them if they do occur, and prevent them from entering the storm sewer or any receiving water bodies. Other best management practices can also be employed to reduce the risk, in addition to other applicable permits governing storage tanks.

Best Management Practices

- Refuel vehicles and equipment offsite at locations with designated fuel areas
- Onsite refueling locations should be designed to prevent runoff and spills by having an impervious surface graded away from storm sewer inlets.
- Fuel stations should be covered with an area at least as large as the grade break or fuel dispensing area, and this cover should direct stormwater to a perimeter drain or away from the area.
- Install oil control devices in storm drains or basins that may receive contaminated runoff.
- Install vapor recovery nozzles to reduce drips and vapor.
- Develop a spill prevention plan that standardizes training and procedures related to use, storage, and potential spills of fuel. Additionally, provide equipment to both clean up the spill and prevent contamination of the storm sewer.
- Routinely inspect refueling structures and equipment for proper function and condition, as well as any signs of corrosion or potential failure. Above ground tanks should be inspected periodically by a professional.

5.5 Dumpsters/Trash Cans-Solid Waste Collection and Recycling

Overview

Dumpsters and trash cans are potential producers of illicit discharges if polluted materials leak and travel to the storm sewer or receiving water bodies. However, as with other waste and chemical storage, proper storage and careful handling will minimize exposure. Unlidded dumpsters and trash cans allow rainwater to mix with the waste inside and produce polluted leachate that could then spill during unloading. Dumpsters and trash cans must also remain in good condition where nothing can leak out of the bottom and possibly contaminate the storm sewer and streams.

Best Management Practices

- Provide only covered containers, rather than those with completely open tops, to reduce the amount of rainwater entering the container and the potential for leaking during normal use.
- Place trash containers, recycling containers, and cigarette butt containers in high pedestrian traffic areas, common areas, entrances to buildings, and sidewalk entries from parking lots. Increase the number of containers if overfilling is a problem.
- Install adequate number and size of temporary trash receptacles for special events.
- Provide adequate containers at building rear and services entrances so trash materials from within the buildings are immediately transferred to covered containers during routine cleaning.
- If collected trash materials are hauled using a vehicle, install an impermeable liner in the cargo area to contain any leakage during transfer. Wash any leakage in designated wash areas that drain directly to the sanitary sewer.
- Provide a secure area for dumpster loading and unloading to prevent tampering, unwanted dumping, and damage from other vehicles.
- Routinely inspect dumpster and trash can lids and other surfaces for deterioration or damage that may cause exposure to stormwater or allow leakage.
- Provide staff training to ensure only proper materials are loaded into the dumpster to help avoid accidental mixing of chemicals or introduction of corrosive materials.
- If any leaks are detected, install berms or other devices to ensure nothing flows into the storm sewer system or receiving waters.

5.6 Chemical Storage

Overview

the City has a number of chemicals onsite that are related to routine cleaning and maintenance, and contractors possessing chemicals and chemical-dispensing equipment may also be in the City. All chemicals that could potentially contaminate stormwater and local waterways should be clearly marked and stored in secure locations.

Best Management Practices

- Plainly label containers that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if a spill occurs.
- Store materials away from high traffic areas and on structures that keep them from coming into contact with the floor.
- Storage areas, loading and unloading areas should be covered or enclosed to reduce potential contact with stormwater.
- Storage spaces and containers should be routinely checked for leaks or signs of deterioration.
- Provide contract language that requires contractors to accommodate safe storage of chemicals and hazardous materials and to be responsible for safe handling and cleanup of any potential spills.

5.7 Outdoor Loading

Overview

Outdoor loading areas are potential sources of illicit discharge if polluted materials leak during transport to/from designated loading areas. With proper storage and careful handling, it is possible to minimize exposure to stormwater at loading areas.

Best Management Practices

- If possible, perform outdoor loading under a tarp or covered structure.
- Preferably load material in dry weather.
- Avoid positioning loading areas near storm drains.
- Grade or berm the loading area so that stormwater drains to a dead-end connection or sanitary sewer, rather than a stream or storm drain.
- Train employees in spill cleanup so that leaks and spills are addressed in a timely fashion.

5.8 Outdoor Material Storage

Overview

The City has material storage areas outside, and houses substances such as grease, paints, detergents, metals, and bulk materials, such as mulch, in these outdoor locations. These materials must be stored and handled in accordance with procedures that prevent potential contamination of the MS4 or associate water bodies.

Best Management Practices

- Store all materials in appropriately labeled containers, if applicable.
- Avoid placing materials near storm drains.
- Make sure all outdoor storage containers have lids that are kept closed to prevent stormwater contamination.
- If materials are too large to store in containers, cover with a tarp and appropriately label the area to indicate the stored materials that are present.
- Provide perimeter controls for erodible stockpiles of materials such as mulch, sand, and gravel to prevent migration into the stormwater system.
- Routinely inspect outdoor material storage areas for leaking or corrosion of stored substances.
- Clean up all migrating materials upon discovery and repair the containment of the migrating pollutant to prevent potential contamination of stormwater and streams.

5.9 Power washing

Overview

Power washing can concentrate organic sediment, precipitates, surface material, and cleaning solutions into wash water, which is characterized as an illicit discharge if it enters the MS4. Power washing water, cleaning agents, and other compounds should not enter the storm sewer system or water bodies. Care should be taken to prohibit the wash water from flowing into the storm sewer, including roof drains, downspouts, and any other conveyances leading to them.

Best Management Practices

- Identify storm drains and possible conveyances to storm drains prior to commencing with cleaning or washing, and take measures to prevent waste water from entering them.
- Use dry cleanup methods to remove debris prior to washing surfaces.
- Determine where waste water may pool and vacuum up or allow it to evaporate.
- Water not containing chemicals or cleaning agents may be allowed to infiltrate in grass or gravel areas. Waste water containing chemical pollutants must be captured and disposed of in the sanitary sewer. Suspended solids and oils must be removed from the wastewater using booms, absorbent pads, or other devices.
- Apply minimal water and prioritize dirty areas rather than cleaning or pressure washing an entire building.

5.10 Pesticide Application

Overview

Grounds and building maintenance crews occasionally use pesticides and herbicides in routine operations, and the mixing and loading of applications into equipment is often in the same areas where fueling and maintenance occurs. Consequently, these are the areas where an accidental discharge into the MS4 is likely to occur. Care should be taken to properly store, handle, and apply these chemicals in much the same manner as other hazardous materials, and only adequately trained staff should be responsible for their use.

Note: Applications of pesticides and herbicides over waters of the state or at water's edge are governed under a separate NPDES permit from DEQ.

Best Management Practices

For Application:

- Apply herbicides and pesticides only after other, non-chemical approaches fail
- Determine which product are the most useful and least environmentally harmful for a given situation and use sparingly and as directed by the manufacturer.
- Use chemical products only during weather conditions appropriate for the application and that will not potentially mix with stormwater in a rain event.
- Avoid applying chemicals within 5 feet of pavement, 25 feet of storm drain inlets, or 50 feet from a water body.

Spill Prevention:

- Spray equipment must be emptied of solutions before the loading of vehicles, transportation, and storage of equipment.
- Washwater from application equipment must be disposed of in the sanitary sewer and any leftover material resealed in a container or disposed of at a hazardous waste collection location.
- Store materials in a secure location and keep containers clearly labeled

5.11 Street Sweeping

Overview

Streets and parking areas are prone to collect and concentrate significant amounts of materials that contribute to polluted runoff into storm sewer systems and water bodies. Sediment, debris, trash, automotive fluids, road salt, and trace metals can be minimized by such practices as street sweeping. Smaller equipment can also be used in other hardscape areas. In addition to reducing the chance and severity of polluted discharges into downstream waters, the practice also extends the useful life of stormwater basins by reducing the sediment load.

Best Management Practices

- Establish a schedule that best addresses the rate of accumulation of materials on pavement and hardscapes, and adjust the schedule after significant events such as snowfall (sand, salt).
- Materials collected during cleaning activities should be disposed of at an offsite landfill, and material recovery should be limited to the volume and weight appropriate for direct transport to such facilities
- Materials collected during cleaning activities should not be temporarily stored onsite.

5.12 Storm Drain Maintenance

Overview

Storm drains are often the point of entry into storm sewer system, and they need to be cleaned and maintained on a regular basis to reduce the amount of pollution, trash, and debris into receiving water bodies. Clogged drains can overflow, thereby increasing the volume of water flowing into downstream structures and streams, as well as the chances for damage and erosion.

Some common pollutants found in storm drains include:

- Trash and debris
- Sediments
- Oil and Grease
- Antifreeze
- Paints
- Cleaners and solvents
- Pesticides
- Fertilizers
- Animal waste
- Detergents

Best Management Practices

- Maintain an accurate storm sewer map and information table depicting all components of the MS4 and receiving water bodies.
- Establish a routine inspection schedule for observing structure conditions and for screening potential illicit discharges.
- Utilize a vacuum truck for emptying materials trapped in drainage inlet and junction sumps or otherwise dispose of materials in accordance with state and federal regulations.
- Keep impervious surfaces clean of trash, debris, and sediment.
- Mark drainage inlets to maintain public awareness about illegal dumping

5.13 Exterior Building Maintenance

Overview

Maintenance of building exteriors may involve a number of different practices, from cleaning to resurfacing. Pressure washing, for example, can concentrate organic sediment, precipitates, surface material, and cleaning solutions into the waste water, which is characterized as an illicit discharge if it enters the MS4. Power washing water, cleaning agents, and other compounds should not enter the storm sewer system or water bodies. Care should be taken to prohibit fluids from flowing into roof drains, downspouts, and any other conveyances leading to them.

Best Management Practices

Cleaning:

- Identify storm drains and possible conveyances to storm drains prior to commencing with cleaning or washing, and take measures to prevent waste water from entering them.
- Use dry cleanup methods to remove debris prior to washing surfaces.
- Determine where waste water may pool and vacuum up or allow it to evaporate.
- Water not containing chemicals or cleaning agents may be allowed to infiltrate in grass or gravel areas. Waste water containing chemical pollutants must be captured and disposed of in the sanitary sewer. Suspended solids and oils must be removed from the wastewater using booms, absorbent pads, or other devices.
- Apply minimal water and prioritize dirty areas rather than cleaning or pressure washing an entire building.

Painting:

- When painting, use water-based paints and thinners instead of oil-based whenever possible.
- Mix paint indoors before starting work to minimize the potential for spills entering the MS4.
- When using spray paint, use smaller paint containers with high pressure sprayers to minimize waste.
- Use impermeable drop cloths when painting.
- Immediately clean up all spills when they occur.
- Recycle or donate excess paint.
- Allow paint containers to completely dry before disposal.

Clean water-based paint off of brushes in a sink connected to the sanitary sewer. Oil-based paint waste must be reused, recycled, or disposed as hazardous waste.

5.14 Landscape Management

Overview

Typical landscape maintenance practices can produce stormwater contaminants such as pesticides, soil, fertilizers, and debris which can pollute receiving water bodies. Maintaining an attractive City landscape can require considerable efforts in pruning, dressing, watering, and fertilizing. Steps can be taken to

reduce the harmful effects of these practices on the stormwater system and water flowing into water bodies by reducing the number of inputs and waste, and by keeping maintenance crews adequately trained in best management practices.

The MS4 permit requires that a turf and landscape nutrient management plan be developed by a certified turf and landscape management planner in accordance with § 10.1-104.2 of the Code of Virginia on all lands owned by the City where nutrients are applied to a contiguous area greater than one acre. Designated the City staff tracks the total acreage where turf and landscape management plans are required and where such plans have been implemented, and they shall summarize the schedule and its implementation in annual permit reports.

The City shall not apply any de-icing agents containing urea or other forms of nitrogen or phosphorus to parking lots, roadways, and sidewalks, or other paved surfaces.

Best Management Practices

- Compost lawn wastes and re-till into the soil of planting areas or mix into mulch.
- Minimize turf areas by planting groundcovers, wildflowers, and shrubs, thereby reducing mowing and water requirements.
- Select drought and heat resistant turf species, and do not cut turf shorter than 3 to 4 inches. Mulch clippings should be left on the turf as a natural fertilizer and ensure clippings are swept away from paved surfaces.
- Replace exotic plant species when necessary with regional, indigenous plants, which are typically more water efficient and disease resistant.
- Utilize low-volume irrigation methods and only water areas as needed to enhance plant root growth and avoid runoff issues.
- Reduce the use of fertilizers and utilize less-toxic alternatives such as composted organic material. If fertilizer is required, apply slow-release organic versions only on days with little wind and no chance of heavy rain. Apply only during the recommended time of year for the particular turf grass on the site.
- Avoid stockpiling materials leftover from landscape maintenance. Install composting facilities for light litter and remove other materials to an offsite recycling/composting facility.

5.15 Street Parking and Maintenance

Overview

Sometimes, street parking is necessary due to full parking lots and maintenance activities. Vehicles and towed trailers have the potential to contaminate the MS4 and nearby streams, but careful maintenance of these areas will prevent these consequences from occurring.

Best Management Practices

- Ensure streets are free of sediment and debris. Street sweep or clean as required.
- Ensure oil drippings and spills are managed appropriately. If leaking vehicles are stored in street parking, consider moving the vehicle away from storm drains and placing a drip pan beneath the leaking equipment. Captured leaking fluids should be disposed in designated hazardous waste containers.
- Park maintenance equipment and portable toilets away from storm sewer connections.
- Validate inlet protection and other erosion and sedimentation control measures are installed correctly before performing any maintenance operations where sediment or other pollutants could enter the storm system.

6.0 WASTE MANAGEMENT & DISPOSAL PROCEDURE

Responsible management of chemical and materials wastes can greatly reduce the amount of pollution in stormwater runoff. The following sections describe the recommended procedures for managing and disposing of waste materials the City may encounter. For any of the materials listed below, always see the Material Safety Data Sheets (MSDS) if available. The Good Housekeeping Manual is not meant to supersede or replace any Material Safety Data Sheet or manufacturer's instructions, but rather supplement them and further reduce the impacts of stormwater pollution.

6.1 Aerosol Cans

Aerosol cans should be properly disposed of as hazardous waste, and a local hazardous waste disposal vendor should be contracted to transfer the materials offsite to their facility. Recycling is also an acceptable route, however cans must be punctured and emptied after final use, and the contents must be separately stored and disposed of as hazardous waste. The City is a small quantity generator of aerosol cans, mainly relating to janitorial services, and is not likely to accumulate the necessary volume to make recycling efficient.

A waste disposal vendor will typically provide either a 55-gallon steel drum, fiber drum, or fiber box for collection of aerosol cans, and this container should be placed at a location central to waste collection and storage of other chemicals. The container should remain closed and labeled as "Aerosol Cans." Once the 55-gallon limit is reached, contact the vendor within three days and have them transfer the container offsite. Do not move the container to another offsite location. Obtain a hazardous waste manifest from the vendor and keep the records on file.

6.2 Animal Carcasses

Roadside and property management of animal carcasses is generally dictated by the location and situation, with priority given to ensuring public safety by immediately removing the carcass from the area. Carcasses should be disposed of at a landfill or in a covered dumpster that is frequently emptied.

6.3 Antifreeze

Place used antifreeze in a drum or tank and clearly label as "Used Antifreeze." The container should remain closed when not in use and must be in good condition, with no other fluids being added. Contract a local hazardous waste disposal vendor to transfer the container offsite when it is full, and maintain records about the vendor and the final destination of the container.

6.4 Batteries

Traditional alkaline batteries (AA, AAA, C, D, 9-volt) are not regulated by the EPA and can legally be thrown away with other, non-hazardous waste. However, types of batteries that are classified as Universal Waste and must be collected, stored, and recycled include: Nickel Cadmium, Nickel Metal Hydride, Lithium Ion, Lithium, Mercury, Silver, Lead Acid, Lead Acid Flooded Cell Batteries, Non-Spillable Lead Acid Batteries, Sodium Batteries, and Potassium Hydroxide.

Recycling vendors are available and may provide a storage container and option to mail the materials to their location, or the batteries can be transported to the nearest recycling facility.

- Batteries to be recycled should be clearly marked as “Waste Batteries” or “Used Batteries.”
- The battery collection container should have the date that the first battery is collected marked on the outside. Batteries can be stored in the container for up to one year of the marked date.
- Maintain records for the final destination of the batteries once they leave the site to a recycling facility or vendor.

6.5 Treated Lumber

The priority for treated timber is to first find potential for reuse in another project. If the materials are being discarded, conditions apply based on the chemicals used to treat the wood.

- Timber Treated with Chromated Copper Arsenate (CCA): The Resource Conservation and Recovery Act (RCRA) exempts CCA treated lumber from hazardous waste regulation as long as the wood is in the same form it was for its intended use. Mulch, for example, is not exempt and cannot be legally sent to the landfill.
- Timber Treated with Creosote: Though not required by EPA regulation on weathered wood, a disposal facility may require Toxic Characteristic Leachate Testing (TCLP) prior to disposal. New creosote treated timber must be tested to determine if it is hazardous prior to disposal. Contact the local hazardous waste authority for further guidance on testing.
- Timber Treated with Pentachlorophenol (PCP): All PCP treated timber must be tested prior to disposal. Contact the local hazardous waste authority for guidance.

6.6 Empty Containers

All empty containers should be properly stored to reduce degradation until such time as they are recycled or disposed of at a landfill. Best practices include keeping the containers closed and storing them together in a covered area. Label the containers as “Empty.”

Empty containers previously storing non-hazardous/non-RCRA materials such as oils and diesel fuel should be disposed or recycled in the following manner:

- **Disposal:** Empty the containers. Use absorbents such as rags or oil dry (no liquids) to help capture the remaining material. Cut off both ends and crush the containers.
- **Recycling:** Empty the containers. Use absorbents such as rags or oil dry (no liquids) to help capture remaining material. Send the container to a recycling facility.

Empty containers previously storing hazardous/RCRA non-acute hazardous materials or wastes (such as gasoline, low flashpoint solvents, and some paints) should implement the following options:

- **Disposal:** Empty the containers so that the remaining residue at the bottom is one inch or less. Use absorbents such as rags or oil dry (no liquids) to help capture the remaining material. Cut off both ends and crush the containers.
- **Recycling:** Empty the containers so that the remaining residue at the bottom is one inch or less. Use absorbents such as rags or oil dry (no liquids) to help capture the remaining material. Send the container to a recycling facility.

Containers not yet disposed of or recycled can be kept in a central, secure, storage area. Containers must be closed and clearly labeled “Empty Container – Hazardous Waste” and inspected weekly.

Containers can be stored for up to 180 days and disposed of by a hazardous waste vendor. Obtain a hazardous waste manifest from the vendor and keep it on file after disposal.

6.7 E-Waste (Monitors and Computers)

All computers, monitors, and other electronic waste should be properly disposed of and/or recycled through an electronic waste vendor.

6.8 Filters-Oil, Gas, Diesel, Paint

Used filters may either be recycled or disposed of as solid waste under the following conditions:

Used Oil Filters

- **Recycling:** Drain filters into a used oil container. Place them in a container labeled “Used Oil/Diesel Fuel Filters” and contact a scrap metal vendor for recycling. Maintain records for the final destination of the filters from the vendor.
- **Disposal:** Oil filters can be disposed of as solid waste when punctured and drained. Drain into an enclosed container labeled “Used Oil.”

Used Diesel Fuel Filters

- **Recycling:** Drain filters into a used oil container. Place them in a container labeled “Used Oil/Diesel Fuel Filters” and contact a scrap metal vendor for recycling. Maintain disposal records.
- **Disposal:** Diesel fuel filters can be disposed of as solid waste when punctured and drained. Drain into a used oil container.

Used Gasoline Filters

- **Recycling:** Used gasoline filters with metal casings are exempt from regulation when treated as scrap metal and recycled. Drain into a used gasoline container and place drained filters into a

separate container labeled "Used Gasoline Filters." Contact a scrap metal vendor for disposal and maintain records.

- **Disposal as Hazardous Waste:** Used gasoline filters may also be managed according to hazardous waste requirements, at or near their point of generation with storage limits up to 55 gallons. Place drained filters into a container labeled "Used Gasoline Filters". Once the 55 gallon threshold is met, the container must be shipped off-site by a hazardous waste vendor. Maintain records of the disposal.

6.9 Fluorescent Lamps, HID, and Metal Halide Lights

Types of lamps that are considered as Universal Waste under the Resource Conservation and Recovery Act and must be collected, stored, and recycled include: fluorescent bulbs, high intensity discharge, metal halide, neon, mercury vapor, and high pressure sodium lights.

Lamps may be collected in an empty box the new ones came in or purchased from a lamp recycling vendor. The lights must be securely stored and unbroken. Label the containers as "Waste Lamps" or "Used Lamps" and indicate the date the first lamp was placed there.

Broken bulbs must be contained in leak proof containers. Check with the vendor to see if they will take broken bulbs as well as unbroken.

Dispose of the lamps at the nearest recycling facility and maintain a record.

6.10 Freon

EPA requires service shops to use approved refrigerant recovery equipment for repair of air conditioning systems in motor vehicles. The City technicians using refrigerant recovery equipment must be trained and certified by an EPA-approved organization.

To comply with the requirements, service shops must send the Motor Vehicle Air-Conditioning (MVAC) Certification form to EPA along with the facility name and address, name of equipment manufacturer, equipment model and serial number, and a manufacture date. Maintain records for three years of the technician certifications and the name and address of the reclamation facility.

6.11 Herbicides and Pesticides

Herbicides and pesticides are both considered pesticides under EPA regulation. Containers should be stored in a covered area on impervious flooring, and containers should be segregated according to type. Ensure all containers are labeled and kept closed, and remove only the amount expected to use until the container is empty.

Never pour leftover pesticides down the sink, into the toilet, or down a sewer or street drain. Pesticides may interfere with the operation of wastewater treatment systems or pollute waterways, where they may harm fish, plants, and other living things.

Empty pesticide containers may be managed as a universal waste, disposed, or returned to the vendor.

Partially Full Containers as Universal Waste

- Herbicide/Pesticides that cannot be completely used and the containers are partially full should be marked as “Waste Pesticide” or “Used Pesticide.”
- Contact the local hazardous waste authority for disposal as solid waste. Maintain a record of the final destination for used pesticide containers.

Empty Containers for Disposal or Recycling

- Containers should be rinsed three times with potable water and disposed. Save the rinse water in separate container for future applications. If the rinse water is not reused it must be properly managed. Contact the local hazardous waste authority for guidance on proper disposal.

Partially Filled Containers Returned to the Vendor

- Some vendors may accept returned pesticides. Keep all containers clearly marked with original labeling and contact vendor for proper handling and shipment.

6.12 Fluorescent Light Ballasts (PCB and Non-PCB)

PCBs or polychlorinated biphenyls can be present in the solid potting material and in the capacitors of fluorescent light ballasts (FLB) manufactured before 1979, and these devices may still be in use with fluorescent lights in buildings from that era¹. Non-leaking light ballasts are restricted to disposal in sanitary or industrial landfills with leachate collection, liners, and appropriate groundwater monitoring.

A PCB-containing FLB failure, leak, smoking condition, or fire requires the following:

- Isolate the affected area from central ventilation and ventilate the air separately
- Relocate persons from the affected area.
- Hire experienced cleanup personnel to clean up and decontaminate equipment and surfaces.
- Comply with environmental regulations for proper storage and disposal of contaminated equipment and cleanup materials.

Storage of Non-leaking Equipment

- Non-leaking equipment can be stored for 30 days, after which point storage is subject to more stringent requirements.
- Dispose of the non-leaking ballasts as a solid waste in a municipal solid waste landfill.

¹ PCB-containing fluorescent light ballasts that are currently in use have exceeded their designed lifespan and pose significant risk. EPA recommends removing PCB-containing FLBs from buildings as soon as possible to prevent potential inhalation or dermal exposure.

6.13 Mercury Switches and Equipment

A mercury switch or equipment is any device containing mercury integral to its function (e.g. thermostats, appliances). Spilled or exposed mercury poses significant risk as it can evaporate and become an invisible, odorless and toxic vapor. They are classified as Universal Waste and must be collected, stored, and recycled while intact in the device.

- Collect unbroken mercury switches and equipment in an empty container marked "Waste Mercury Switch/Equipment" or "Used Mercury Switches/Equipment." Mark the outside of the container with the date the first item is placed in the container.
- Store for up to a year in the enclosed container and transfer the materials to a local recycling facility or contact the local hazardous waste authority.
- Maintain a record of the final destination of the equipment.
- If mercury is spilled or exposed, isolate the area and hire experienced professionals to clean up and decontaminate equipment and surfaces.

6.14 Oil, Gas, and Diesel Waste

Waste fuels must be stored in separate, enclosed drums or tanks and clearly labeled as "Used Oil," "Used Diesel Fuel," or "Used Gasoline." Each container should remain closed unless in use and should remain in a covered, secured area. Contact a recycling vendor when the container is full and maintain records from the vendor.

Spillage

- Apply absorbent on the spill area and dispose of the waste properly. Never hose down the affected area. Refer to Section 8.17 for guidance on disposal of rags, wipes, and absorbents.
- Prevent fluids from entering the storm sewer by diverting by diverting any flows that are on an impervious surface.
- If a spill occurs on a pervious surface such as sand, gravel, or grass, mark the area and contact DEQ.

6.15 Paint Waste-Latex, Solvent Based

Paints and liquid surface coverings such as polyurethane should be stored in containers that are clearly labeled and remain closed. Store containers in secure, covered area off the floor.

Latex Paint

Latex paint is non-hazardous and its containers may be discarded once completely empty and does not contain free liquid. Absorbents can be used to remove any remaining free liquid, or spread the paint on cardboard or newspaper and allow the container to dry completely.

Solvent Based Paints

These paints—including stains, sealers, and associated thinning agent—should be managed as hazardous waste due to the organic solvents they contain. If minor amounts are leftover and cannot be used, use absorbents to remove any remaining free liquid, or spread the paint onto newspaper or cardboard and allow to dry completely. If the quantity is large, contact a waste disposal vendor and maintain records of the disposal.

6.16 Parts Cleaners

Low-Flashpoint Solvents

Low-flash solvents contained in parts washers become hazardous waste once the solvent becomes too contaminated to clean effectively. Unless the parts washers are under a regularly-scheduled service agreement, a hazardous waste vendor should be contacted when the solvents become ineffective at cleaning.

High Flashpoint Solvents

Waste solvents with a high flashpoint are not typically hazardous and can be recycled, unless the solvent is tested for pH and toxicity and is determined to be hazardous waste. Contact the vendor for related information, or contact a hazardous waste vendor for disposal. Maintain records of the final destination.

Aqueous Solvents

Waste aqueous solvents are typically not hazardous and can be recycled, unless they have become highly contaminated with materials from the washed parts, such as toxic metals and oils. Unless the spent liquid is tested, it should be assumed that it is hazardous and should be treated as other solvents by a waste vendor.

6.17 Rags, Wipes, Absorbents

Disposal methods vary for rags, wipes, and absorbents, depending on the type of substance absorbed. They will either fall under the Used Oil Regulation, the Hazardous Waste Regulations, or the Solid Waste Regulations.

Absorbents Used to Capture Used Oil

Waste rags, wipes, and absorbents containing oil (such as motor oil, hydraulic oil, etc.) may be discarded in the trash or laundered at an industrial facility if they are not dripping or completely saturated with oil. Materials that are saturated with used oil should be wrung out or otherwise managed to remove as much free flowing oil as possible. The extracted oil should be contained with other used oil and recycled by a vendor, and the absorbent materials can be discarded in the trash. Maintain records of the final destination of materials that are recycled.

Absorbents Used to Capture Diesel Fuel

Waste rags, wipes, and absorbents containing diesel fuel may be discarded in the trash or laundered at an industrial facility if they are not dripping or completely saturated with diesel fuel. Materials that are saturated with used oil should be kept in a closed container marked as "Used Absorbents." Contact a used oil vendor when the container is full, and keep records of the final destination.

Absorbents Used to Capture Hazardous Materials

Waste rags, wipes, and absorbents containing hazardous materials such as gasoline, solvent-based paint, and some solvents and cleaners must be managed as hazardous waste. Collect the materials into a barrel or bucket with a tightly fitting lid and marked as "Waste Absorbents" and contact a hazardous waste vendor when full.

6.18 Scrap Tires

The primary means of scrap tire disposal is recycling through a registered waste tire hauler or at a scrap tire facility. If tires cannot be recycled they can be taken to a landfill that accepts waste tires. Virginia regulation states that no more than 100 scrap tires may be stored on site at any one time without a Solid Waste Permit. When the tires are transported off the site, keep records of the final destination.

6.19 Solid Waste-Trash

All solid items not recycled or managed as hazardous waste may be considered as solid waste and disposed of using a trash collection service or municipal landfill. Liquids generally cannot be disposed of in regular trash collection service and the local hazardous waste authority should be consulted if suspect liquids are in the waste collection. Recycling vendors may collect additional liquid wastes that are not listed in this document.

Waste should be collected in bags that are securely closed and transferred to a lidded dumpster in good condition. Loose trash from unsecured collection could blow into stormwater drainage areas or come in contact with stormwater and potentially contribute pollutants into receiving waters.

6.20 Surplus and Excess Property

Materials and property that are no longer in use and stored in the City should be managed carefully so that they are expeditiously transferred to their next user or location. Materials should not be stockpiled in locations where they might deteriorate and potentially cause pollutants to enter the stormwater.

APPENDIX A: Points of Contact

Salem Good Housekeeping/Pollution Prevention Points of Contact

Below is a table of points of contact that can be useful throughout the various components of the Good Housekeeping/Pollution Prevention Program.

Salem Pollution Prevention Team

Team Member	Title	Office Phone	Area of Responsibility
Chuck Van Allman	City Engineer		Technical Coordinator for SWPPP development, roll-out throughout facility, and future modifications.
Jim Fender	Director of the Solid Waste Department	(540) 375-3052	Ensure that BMPs listed are in place, operative, and effective where activities that impact stormwater are conducted
Mike Tyler	Director of the Street and General Maintenance Department	(540) 375-3039	
Tony Terry	City Garage Superintendent	(540) 375-4002	Ensure that BMPs listed are in place, operative, and effective where activities that impact stormwater are conducted
Laura Reilly	City Horticulturist	(540) 375-3028	
David Breeden	Street Superintendent	(540) 375-3039	
John Wade	Sanitation Superintendent	(540) 375-3071	

MS4 Localities – Points of Contact		
VDOT Salem District	Salem District Office	(540)-387-5320
Roanoke County Stormwater Management	IDDE Reporting	(540) 772-2065
City of Roanoke	Engineering	(540) 853-2731
Agency – Points of Contact		
DEQ	Pollution Response & Preparedness Program	(804) 698-4000
Emergency Notification		911
National Response Center		(800) 424-8802

APPENDIX B: Contractor Oversight Form

Contractor Oversight Form

Use this form in conjunction with bi-weekly inspections of work being performed by contractors that could potentially pollute stormwater and retain records for annual reporting.

Contractor Name: _____

Location: _____ Dates and duration of work: _____

General description of the work: _____

First Inspection Followup Inspection

If this is a followup inspection, were any previous inspection items that needed to be addressed? Yes No

If yes, please describe: _____

Describe the potential pollutants associated with this work and how they will be contained: _____

Are there any areas of concern regarding pollution prevention/good housekeeping best management practices?

Yes No

If yes, describe the concern and how it should be addressed:

Is any follow-up action required? Yes No

If yes, please explain.

APPENDIX C: Knowledge Check Quiz

Pollution Prevention Knowledge Check Quiz

Name: _____

Date: _____

1. IDDE stands for:
 - a. Illegal Damage and Discharge Energy
 - b. Important Discovery Development and Experiment
 - c. Illicit Discharge Detection and Elimination
 - d. Illegal Drainage and Dumping to the Environment

2. In reference to an illicit discharge, a generating site is:
 - a. Where electrical generators are stored
 - b. A specific source area that may produce pollutants
 - c. A landscape irrigation area
 - d. Where the water supply originates

3. The Stormwater Pollution Prevention Mapping shows all of the following except:
 - a. Stormwater pipe locations
 - b. Potential pollution generating sites
 - c. Stormwater discharge locations
 - d. Bus Stops

4. Good Housekeeping/Pollution Prevention inspection records should be kept for _____ year(s):
 - a. 1
 - b. 10
 - c. 3
 - d. 5

5. If a potential source of pollution is reported to you by a student you should:
 - a. Take no action
 - b. Contact the Director of Facilities
 - c. Call the police department
 - d. Clean up the pollution yourself

6. Vehicles can be washed under all the following circumstances except:
 - a. In a designated wash bay that drains to the sanitary sewer
 - b. Near a storm drain
 - c. On the grass, but with no soap or detergents
 - d. At a local commercial car wash

7. Which of the following landscape maintenance materials are considered potential sources of pollution:
 - a. Mulch piles
 - b. Concentrated grass clippings
 - c. Fertilizers
 - d. All of the above

8. True or False: Powerwashing is never considered to be a source of illicit discharges.

9. Which of these sources is an illicit discharge:
 - a. Waterline flushing
 - b. Air conditioning condensate
 - c. Automotive fluids
 - d. Fire-fighting activities

10. Spilled fuel should be cleaned up in the following manner:
 - a. Let it dry and hose off the area
 - b. Use kitty litter and sweep it into the drain
 - c. Spilled fuel is not a source of pollution, and no action is needed
 - d. Use a spill kit and contain any used absorbents

Special Local Water Quality Concerns

11. Which of the following are possible sources of sediment:
 - a. Leaves in drain
 - b. Dirt stockpiles
 - c. Fertilizer
 - d. Portable toilet

12. Which of the following is a method to control sediment:

- a. Silt fence
- b. Hay bales
- c. Gutter buddies
- d. All of the above

13. Which of the following is a pollutant of the Chesapeake Bay TMDL:

- a. PCB
- b. Oil
- c. Bacteria
- d. Sediment

14. Which of the following best describes a Nutrient Management Plan:

- a. Conservative practices for the use of nutrients such as fertilizer to effectively provide nutrients to plants while protecting against adverse effects.
- b. Practices on the use of mulch and other ground covers for protecting plants and ensuring that they have adequate nutrients.
- c. Plan for applying nutrients while observing weather conditions to ensure that it does not rain within two weeks of applying fertilizers.
- d. Plan that applies to grass cutting.

15. The nutrient management plan is applicable to:

- a. Personnel applying nutrients
- b. President
- c. Students
- d. Visitors

Answer Key

1. IDDE stands for:
 - a. Illegal Damage and Discharge Energy
 - b. Important Discovery Development and Experiment
 - c. Illicit Discharge Detection and Elimination**
 - d. Illegal Drainage and Dumping to the Environment

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 - b. 10
 - c. 3**
 - d. 5

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 - b. Contact the Director of Facilities**
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15. The nutrient management plan is applicable to:

- a. Personnel applying nutrients
- b. President
- c. Students
- d. Visitors

APPENDIX D: Annual Training Plan Documentation Form

