

GOOD HOUSEKEEPING AND POLLUTION PREVENTION MANUAL FOR THE



May 11, 2017

Prepared in partnership with:



Tri-County Regional Planning Commission



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Section 1

1.0 Introduction

Stormwater runoff is part of a natural hydrologic process. Human activities particularly urbanization and agriculture, can alter natural drainage patterns and add pollutants to rivers, lakes, and streams as well as coastal bays, estuaries, and ultimately, the ocean. Numerous studies have shown urban runoff to be a significant source of water pollution, causing declines in fisheries, restricting swimming, and limiting our ability to enjoy many of the other benefits that water resources provide. Urban runoff in this context includes all flows discharged from urban land uses into stormwater conveyance systems and receiving waters and includes both dry weather non-stormwater sources (e.g., runoff from landscape irrigation, water line and hydrant flushing) and wet weather stormwater runoff. In this handbook, urban runoff and stormwater runoff are used interchangeably.

For many years, the effort to control the discharge of stormwater focused mainly on the quantity (e.g. drainage, flood control) and, only to a limited extent, on the quality of the stormwater (e.g. sediment and erosion control). In recent years, however, awareness of the need to improve water quality has increased. With this awareness, federal, state, and local programs have been established to reduce pollutants contained in stormwater discharges to our waterways. The emphasis of these programs is to promote the concept and the practice of preventing pollution at the source, before it can cause environmental problems. Where further controls are needed, treatment of polluted runoff may be required.

1.1 Manual Purpose and Scope

The City of Mason as a member of the Greater Lansing Regional Committee (GLRC) for Stormwater Management has developed this manual to provide staff and management clear guidance on implementing Best Management Practices (BMPs) to reduce pollutants in runoff from municipal operations. Federal and state programs require selected municipalities to reduce the discharge of pollutants in their stormwater discharges to the maximum extent practicable (MEP) using an array of control measures including BMPs.

1.2 Method of BMP Selection

This manual has been developed using the *GLRC Good Housekeeping and Pollution Prevention for Municipalities Handbook* which was primarily designed to assist municipal staff with incorporating pollution prevention controls into their overall stormwater management program and specifically publicly owned/operated facilities (fixed facilities) and field activities (field programs). Users include public and private sector engineers, planners, environmental specialists, and stormwater program managers. Managers and employees of the various municipal facilities and municipal field programs may find this handbook especially helpful when implementing and evaluating the effectiveness of these stormwater management efforts.

The City of Mason MS4 Standard Operating Procedures and Best Management practices manuals will be onsite and available for review at the DPW Maintenance Facility and at the MS4 Superintendent's office.

1.3 Stormwater Pollutants and Impacts on Water Quality

Stormwater runoff naturally contains numerous constituents; however, urbanization and urban activities (including municipal activities) typically increase constituent concentrations to levels that may impact water quality. Pollutants associated with stormwater include sediment, nutrients, bacteria and viruses, oil and grease, metals, organics, pesticides, and gross pollutants (floatables). In addition, nutrient-rich stormwater runoff is an attractive medium for vector production when it accumulates and stands for more than 72 hours.

Municipal Activities Generating Pollutants

Municipalities conduct various activities that are sources of pollutants in stormwater runoff. For the purpose of the manual, these activities are categorized according to whether they occur at a specific location (fixed facility) or across a broader and non-specific area (field programs). These activities must be addressed through the implementation of Standard Operating Procedures (SOPs) to minimize or eliminate the pollutants from entering the local water bodies or drainage system. The City facilities listed below have been prioritized with the first posing the highest risk and the last posing the least risk to stormwater.

City facilities include:

Mason DPW Yard

435 N Jefferson Street

Mason, MI 48854

Phone: (517) 676-9266

The City's maintenance facilities are located at the DPW Yard. All inside drains at these facilities are piped to the sanitary sewer. The maintenance facilities consist of an unheated pole barn and a heated maintenance garage and equipment storage facility. Stormwater travels to a bio swale (tall grass area) before entering the Ingham County drain.

Mason High School

1001 S. Barnes Street
Mason, MI 48854

All inside drains are piped to the sanitary sewer. There are 59 drainage structures on this site and they drain to the Ingham County Rayner drain.

Mason Middle School

235 Temple Street
Mason, MI 48854

All inside drains are piped to the sanitary sewer. There are 23 drainage structures on this site and they drain to the Ingham County Rayner drain.

Steele Elementary School

531 Steele Street
Mason, MI 48854

All inside drains are piped to the sanitary sewer. There are 8 drainage structures on this site and they drain to the Ingham County Rayner drain.

James C. Harvey Education Center

400 S. Cedar Street
Mason, MI 48854

All inside drains are piped to the sanitary sewer. There are 8 drainage structures on this site and they drain to the Ingham County Rayner drain.

Mason Public Schools Maintenance Building

118 W. Oak Street
Mason, MI 48854

All drains inside the building are piped to the sanitary sewer. There are no storm catch basins on site.

Mason Waste Water Treatment Plant

345 N Jefferson Street
Mason, MI 48854
Phone: (517) 676-1166

All drains inside the building are piped to the sanitary sewer. All parking lots drain to the Sycamore creek. The wastewater plant has 4 catch basins.

Mason Water Treatment Plant

1413 Avery lane

Mason, Mi 48854

Phone: (517) 676-1319 ex 1

All drains inside the building are piped to the sanitary sewer. All parking lots drain to the detention basin and then drain to the Ingham County drain. The water plant has 2 catch basins and 1 detention basin.

Mason Fire Station # 1

221 W Ash Street

Mason, Mi 48854

Phone: (517) 244-9025

All inside drains are piped to the sanitary sewer. 2 catch basins drain to the State of Michigan drainage structure.

Mason Fire Station # 2

615 Curtis Street

Mason, Mi 48854

Phone: (517) 244-9025

All inside drains are piped to the sanitary sewer. There are no storm drains.

Mason Public Schools Transportation Department

810 Kim Drive

Mason, MI 48854

All drains inside the building are piped to the sanitary sewer. There are no storm catch basins on site.

Mason Parks and Cemetery Maintenance Facility

219 N Jefferson Street

Mason, Mi 48854

Phone: (517) 676-5041

All inside drains are piped to the sanitary sewer. There are no catch basins drains.

The City of Mason park system consists of eight public parks which total almost 91 acres. The system contains a variety of neighborhood parks and play lots. The City of Mason also provides maintenance for a 2.5 mile walking trail.

Bicentennial Park

Bicentennial Park consists of 2.27 acres and is the location of the Pink School House which serves as one of the Mason Area Historical Society Museums. There are no catch basins within the park.

Bond Park

Bond Park is a 5.3 acre neighborhood park with a lighted ball field and restrooms. Rayner Creek runs through the park. Bond Skate Park includes a 13,000 square foot area for skate boarders and a 12,000 square foot roller hockey rink. There are 4 catch basins within the park that go to the Ingham County Drain.

Griffin Park

Griffin Park is a very small park with a total size of .65 acres. It includes a historical marker, gazebo, and landscape plants. There are no catch basins within the park.

Hayes Park

Hayes Park is the largest City Park with 9.22 acres of park land. The park has a lighted ball field, basketball court, two tennis courts, sledding hill, shelter, restrooms, picnic tables, and grills. There are 5 catch basins within the park they drain to the Ingham County Drain.

Laylin Park

Laylin Park is a 7.2 acre park with two stocked fishing ponds and fishing docks. Fishing is available on a “catch and release only” basis. The park is used predominately for small groups and family picnics and has a shelter with restrooms, picnic tables, grills, and playground equipment. There are no catch basins within the park.

Lee Austin Park

Lee Austin Park is a 0.5 acre park with Sycamore creek running through the property. The park has a small playground, picnic tables and grills. There are no catch basins within the park.

Maple Grove Park

Maple Grove Park is located on 5.2 acres of undeveloped property. Sycamore Creek runs along this park, which makes for a fine nature walk. There are no catch basins within the park.

Rayner Park

Rayner Park is now managed by the City of Mason. This park covers 60 acres and has open fields, a little league baseball field, restrooms, playground equipment, soccer fields, a basketball court, volleyball court, and a mature woodlot. This park also includes a nine-hole Frisbee golf course, horseshoe pits, picnic and BBQ areas and grills. This park supports three ponds and a 200-person pavilion. Construction of a stage is also in progress. There are 3 catch basins within the park which drain to an Ingham County Drain.

Hayhoe Riverwalk

The Hayhoe Riverwalk is a 2.5 mile trail along Sycamore Creek. This trail wanders through the City of Mason and is linked with the City's sidewalk system, making Mason a "walkable community". There are no catch basins within the park.

Mason City Hall

201 W Ash Street

Mason, Mi 48854

Phone: (517) 676-9155

All inside drains are piped to the sanitary sewer. Two catch basins drain to the State of Michigan drainage structure. The City of Mason Police Department, which is also housed within City Hall also, has one catch basin.

1.4 Pollutant Impacts on Water Quality

Sediment is a common component of stormwater, and can be a pollutant. Sediment can be detrimental to aquatic life (primary producers, benthic invertebrates, and fish) by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary component of total suspended solids (TSS), a common water quality analytical parameter.

Nutrients including nitrogen and phosphorous are the major plant nutrients used for fertilizing landscapes, and are often found in stormwater. These nutrients can result in excessive or accelerated growth of vegetation, such as algae, resulting in impaired use of water in lakes and other sources of water supply. For example, nutrients have led to a loss of water clarity in Lake Tahoe. In addition, un-ionized ammonia (one of the nitrogen forms) can be toxic to fish.

Bacteria and viruses are common contaminants of stormwater. For separate storm drain systems, sources of these contaminants include animal excrement and sanitary sewer overflow. High levels of indicator bacteria in stormwater have led to the closure of beaches, lakes, and rivers to contact recreation such as swimming.

Oil and grease includes a wide array of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Sources of oil and grease include leakage, spills, cleaning and sloughing associated with vehicle and equipment engines and suspensions, leaking and breaks in hydraulic systems, restaurants, and waste oil disposal.

Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater. Many of the artificial surfaces of the urban environment (e.g., galvanized metal, paint, automobiles, or preserved wood) contain metals, which enter stormwater as the surfaces corrode, flake, dissolve, decay, or leach. Over half the trace metal load carried in stormwater is associated with sediments. Metals are of concern because they are toxic to aquatic organisms, can bioaccumulate (accumulate to toxic levels in aquatic animals such as fish), and have the potential to contaminate drinking water supplies.

Organics may be found in stormwater in low concentrations. Often synthetic organic compounds (adhesives, cleaners, sealants, solvents, etc.) are widely applied and may be improperly stored and disposed. In addition, deliberate dumping of these chemicals into storm drains and inlets causes environmental harm to waterways.

Pesticides (including herbicides, fungicides, rodenticides, and insecticides) have been repeatedly detected in stormwater at toxic levels, even when pesticides have been applied in accordance with label instructions. As pesticide use has increased, so too have concerns about adverse effects of pesticides on the environment and human health. Accumulation of these compounds in simple aquatic organisms, such as plankton, provides an avenue for biomagnification through the food web, potentially resulting in elevated levels of toxins in organisms that feed on them, such as fish and birds.

Gross Pollutants (trash, debris, and floatables) may include heavy metals, pesticides, and bacteria in stormwater. Typically resulting from an urban environment, industrial sites and construction sites, trash and floatables may create an aesthetic “eye sore” in waterways. Gross pollutants also include plant debris (such as leaves and lawn-clippings from landscape maintenance), animal excrement, street litter, and other organic matter. Such substances may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in streams, lakes, and estuaries sometimes causing fish kills.

Vector production (e.g., mosquitoes, flies, and rodents) is frequently associated with sheltered habitats and standing water. Unless designed and maintained properly, standing water may occur in treatment control BMPs for 72 hours or more, thus providing a source for vector habitat and reproduction (Metzger, 2002).

1.5 Regulatory Requirements

The federal Clean Water Act (CWA), as amended in 1987, is the principal legislation for establishing requirements for the control of stormwater pollutants. Enforcement of the CWA and other laws such as the Endangered Species Act has generated a number of federal, state and local requirements and programs that deal directly or indirectly with controlling stormwater discharges. In the following sections, various programs are discussed in relationship to control of pollutants in stormwater from municipal storm

drain systems. These programs are expected to evolve over the next several years and the user is advised to contact local regulatory and/or municipal officials for further information.

Municipal NPDES Stormwater Programs

In Michigan, municipalities were given the option to either have an individual permit (based on jurisdictional boundaries), or to have a watershed-based approach, which allows many municipalities within a watershed to work as a group, through a watershed management plan to meet Phase II requirements. Each plan serves as a blueprint for protecting water quality within the various watersheds. The watershed management plans are used in turn to identify more specific controls for discharges (e.g., wastewater treatment plant effluent, urban runoff, and agriculture drainage).

In Michigan, the federal NPDES stormwater permitting program is administered by the Michigan Department of Environmental Quality (MDEQ) by issuing general NPDES permits. Municipalities with a population of over 100,000 or that have been determined to be a significant contributor of pollutants are required to obtain an individual NPDES stormwater permit. These municipalities are classified as Phase I communities and are typically referred to as MS4s (municipal separate storm sewer systems). To meet CWA Section 402(p) requirements, smaller, Phase II communities (fewer than 100,000 in population) are covered by a General Permit. Phase II communities are required to develop and implement a stormwater management plan with the following six minimum control measures:

- **Public Education and Outreach** - Distributing educational materials and performing outreach to inform citizens about the impacts polluted stormwater runoff discharges can have on water quality.
- **Public Involvement and Participation** - Providing opportunities for citizens to participate in program development, implementation, and review, including effectively publicizing public hearings or participation.
- **Illicit Discharge Detection and Elimination** - Developing and implementing a plan to detect and eliminate illicit discharges to the storm drain system including illicit connections and illegal dumping.
- **Construction Site Runoff Control** - Developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb one or more acres of land.
- **Pollution Prevention / Good Housekeeping for Municipal Operations** - Developing and implementing a program to prevent or reduce pollutant runoff from municipal operations. (This is a primary focus of this handbook.)
- **Post-Construction Stormwater Management in New Development and Redevelopment** - Developing, implementing, and enforcing a program to address discharges of stormwater runoff from new and redevelopment areas.

In addition to the six measures listed above, the stormwater management plan must identify measurable goals (or performance standards) for each minimum control measure. Measurable goals will be used by the City and the MDEQ to gauge compliance and evaluate the effectiveness of individual BMPs or control measures and the stormwater management program as a whole. Phase II communities must also monitor their efforts and prepare progress reports demonstrating that the community has implemented the minimum control measures and complied with the measurable goals.

Section 2 Source Control SOPs

2.0 Introduction

This section provides a description of specific source control Standard Operating Procedures (SOPs) for activities related to the City of Mason operations.

As noted in Sections 1, municipal fixed facilities conduct activities that have the potential to generate pollutants. The source control SOPs in this section address these activities (see Table 2-1). In addition, the City of Mason conducts various field programs where activities may occur and create pollutants (see Table 2-2).

SOP Fact Sheet

Each SOP fact sheet is a short document that gives all the information about a particular BMP. The fact sheets contain side bar presentations with information on objectives and targeted constituents.

Staff Training

Current maintenance and fire department staff are trained on stormwater pollution prevention once per permit cycle. New employees are trained within the first year of employment. Employees are trained using an EXCAL training DVD specific for municipal

Table 2-1 Municipal Fixed Facility SOPs	
2.1	Spill Prevention, Control and Cleanup
2.2	Vehicle and Equipment Fueling
2.3	Vehicle and Equipment Cleaning
2.4	Vehicle and Equipment Repair
2.5	Outdoor Container Storage
2.6	Outdoor Equipment Maintenance
2.7	Outdoor Storage of Raw Materials
2.8	Waste Handling and Disposal
2.9	Building and Grounds Maintenance
2.10	Parking Lot Maintenance
2.11	Safer Alternative Products
Table 2-2 Municipal Field Program SOPs	
2.12	Road and Street Maintenance
2.13	Salt Application and Storage
2.14	Landscape Maintenance
2.15	Drainage System Maintenance
2.16	Waste Handling and Disposal
2.17	Water and Sewer Utility Maintenance
2.18	Reporting and Recordkeeping

operations and staff. All topics related to stormwater pollution prevention/good housekeeping of municipal facilities and activities are covered during the training.

2.1 Spill Prevention, Control & Cleanup SOP

Description

Spills and leaks, if not properly controlled, can adversely impact the storm drain system and receiving waters. Due to the type of work or the materials involved, many activities that occur either at a municipal facility or as a part of municipal field programs have the potential for accidental spills and leaks. Proper spill response planning and preparation can enable municipal employees to effectively respond to problems when they occur and minimize the discharge of pollutants to the environment. Since spill prevention is such a broad topic, many areas related to spill prevention and control are covered throughout the remaining SOP fact sheets.

Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment
Nutrients ✓
Trash
Metals ✓
Bacteria
Oil and Grease ✓
Organics ✓
Oxygen Demanding ✓

Pollution Prevention

- All indoor drains at all City facilities are piped to the sanitary sewer to avoid surface water contamination.
- All materials are stored indoors and only small spray bottles or containers of cleaning supplies are stored in a closed cabinet.
- Spill cleanup material is readily available (oil Dry and oil socks) at each facility.
- Due to the size and nature of activities at the City of Mason, an official spill prevention plan is not required.

Protocols

- All material handling is conducted indoors, under cover, or away from storm drains or sensitive water bodies.
- Spill cleanup materials, such as absorbents are located at the stations where they are readily accessible (e.g. near storage and maintenance areas).

Spill Cleanup Procedures

- Small non-hazardous spills
 - Use a rag, damp cloth or absorbent materials for general cleanup of liquids
 - Use brooms or shovels for the general cleanup of dry materials
 - If water is used, it must be collected and properly disposed of. The wash water cannot be allowed to enter the storm drain.
 - Dispose of any waste materials properly
 - Clean or dispose of any equipment used to clean up the spill properly

- Large non-hazardous spills
 - Use absorbent materials for general cleanup of liquids
 - Use brooms, shovels or street sweepers for the general cleanup of dry materials
 - If water is used, it must be collected and properly disposed of. The wash water cannot be allowed to enter the storm drain.
 - Dispose of any waste materials properly
 - Clean or dispose of any equipment used to clean up the spill properly

Reporting

- Spills are reported in accordance with applicable reporting laws. Spills that pose an immediate threat to human health or the environment must be reported immediately to 911, the Pollution Emergency Alerting System (PEAS) at 800-292-4706 and the National Response Center (NRC) at 800-424-8802.

- Spills that pose an immediate threat to human health or the environment may also need to be reported within 24 hours to the Local Emergency Planning Committee (LEPC), State Emergency Response Center (SERC), Michigan Department of Agriculture (MDA), various divisions of MDEQ, and the Department of Labor and Economic Growth (DLEG).

- After the spill has been contained and cleaned up, a detailed report about the incident should be generated and kept on file. The incident may also be used in briefing staff about proper procedures.

2.2 Vehicle and Equipment Fueling SOP

Description

<u>Objectives</u>	
▪ Cover	
▪ Contain	
▪ Educate	
▪ Reduce/Minimize	
<u>Targeted Constituents</u>	
Sediment	
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓
Oxygen Demanding	

Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oil and grease, as well as heavy metals to stormwater runoff.

Pollution Prevention

- The City of Mason does not conduct any onsite fueling. They utilize properly maintained offsite fueling stations for all vehicle and equipment fueling with the exception of small gas cans for weed trimmers.
- Focus pollution prevention activities on containment of spills and leaks, most of which may occur during liquid transfers.

Protocols

- "Spot cleaning" of leaks and drips is routinely conducted.
- Maintenance staff is familiar with the site’s proper spill cleanup procedures.

2.3 Vehicle and Equipment Cleaning SOP

Description

Wash water from vehicle and equipment cleaning activities performed outdoors or in areas where wash water flows onto the ground can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, phosphates, heavy metals, and suspended solids to stormwater runoff.

Pollution Prevention

- The City of Mason only does steam cleaning for maintenance of vehicles and equipment in doors that have a drain to the sanitary sewer.
- The fire truck washing is the only exception to this and the Department’s protocol is listed below.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding

Fire Department Vehicle and Equipment Cleaning/Washing Purpose

The purpose of this policy is to comply with the MDEQ and EPA regulations regarding stormwater runoff. Any dry or liquid product or contaminant that may be on the ground, whether it is on a lawn or hard surface such as pavement, may eventually reach a storm water drain during a rain or when washing apparatus or equipment outside of

the fire station. Once that potential runoff reaches the stormwater drain, it will eventually reach a waterway such as a river, lake or pond. This runoff could have a negative effect on the environment. To mitigate the issue, this department is implementing a policy to eliminate or reduce the potential discharge of such storm water runoff contamination.

Policy

It is the policy of this department to take a proactive approach to minimize and eliminate the discharge of potential contaminants produced through the washing and cleaning of apparatus and equipment into the storm water drain system.

Procedure

Cleaning solutions:

This department will use phosphate-free detergents for washing vehicles as appropriate. Personnel will follow the manufacturers recommended procedures as printed on the cleaning detergent.

Vehicles/Apparatus:

All vehicles will be washed within the confines of the vehicle apparatus bays. Runoff of cleaning detergents and water will be squeegeed or diverted to floor drains within the apparatus bays. Runoff within the floor drains will run to the sanitary sewer where it will be treated at a wastewater treatment plant.

Equipment:

Fire hose will be cleaned within the confines of the apparatus bays using a phosphate-free detergent.

Personnel awareness:

This policy will be distributed to all personnel and will be posted in the cleaning/laundry room at all stations.

Maintenance:

Floors will be swept before washing to minimize solid debris from entering the sanitary sewer system. Floor drains will be inspected and cleaned periodically to remove solid sedimentary collected discharge.

2.4 Vehicle and Equipment Repair SOP

Description

Vehicle or equipment maintenance and repair is potentially a significant source of stormwater pollution, due to the use of

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

- Sediment
- Nutrients
- Trash
- Metals ✓
- Bacteria
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding

materials and wastes created that are harmful to humans and the environment. Engine repair and service (e.g. parts cleaning), replacement of fluids (e.g. oil change), and outdoor equipment storage and parking (dripping engines) can impact water quality if stormwater runoff from areas with these activities occurring on them becomes polluted by a variety of contaminants.

Pollution Prevention

- The City of Mason maintains all vehicles and equipment repairs are done at the DPW maintenance facility. This operation always occurs inside the maintenance facility.
- Keep accurate maintenance logs to evaluate materials use.
- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Minimize use of solvents. Clean parts without using solvents whenever possible.
- Keep an accurate, up to date inventory of materials.
- Recycle used motor oil, diesel oil, and other vehicle fluids and parts whenever possible.

Protocols

General

- Move maintenance and repair activities indoors whenever feasible.
- Store idle equipment containing fluids under cover.
- Use a vehicle maintenance area designed to prevent stormwater pollution - minimize contact of stormwater with outside operations.
- Avoid hosing down your work areas. If work areas are washed, collect and direct wash water to sanitary sewer.
- Post signs at sinks to remind employees, not to pour hazardous wastes down drains.
- Clean yard storm drain inlets(s) regularly.
- Do not pour materials down drains or hose down work areas; use dry sweeping.
- Cover the work area so as to limit exposure to the rain.

Material and Waste Handling

- Store materials and wastes under cover whenever possible.
- Designate a special area to drain and replace motor oil, coolant, and other fluids. This area should not have any connections to the storm drain or the sanitary sewer and should allow for easy clean-up of drips and spills.
- Drain all fluids from wrecked vehicles immediately. Ensure that the drain pan or drip pan is large enough to contain drained fluids (e.g. larger pans are needed to contain antifreeze, which may gush from some vehicles).
- Do not pour liquid waste to floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.
- Do not dispose of used or leftover cleaning solutions, solvents, and automotive fluids and oil in the sanitary sewer.
- Dispose of all waste materials according to applicable laws and regulations.
- Collect leaking or dripping fluids in drip pans or containers. Fluids are easier to recycle if kept separate.
- Promptly transfer used fluids to the proper waste or recycling drums and store in an appropriately designed area that can contain spills. Don't leave drip pans or other open containers lying around.
- Do not dispose of oil filters in trash cans or dumpsters, which may leak oil and contaminate stormwater. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Most municipalities prohibit or discourage disposal of these items in solid waste facilities. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.
- Store cracked and/or dead batteries in a non-leaking covered secondary container and dispose of properly at recycling or household hazardous waste facilities.

Maintenance and Repair Activities

- Provide a designated area for vehicle maintenance.
- Keep equipment clean; don't allow excessive build-up of oil and grease.

- If temporary work is being conducted outside: Use a tarp, ground cloth, or drip pans beneath the vehicle or equipment to capture all spills and drips., The collected drips and spills must be disposed, reused, or recycled properly.
- If possible, perform all vehicle fluid removal or changing inside or under cover to prevent the run-on of stormwater and the runoff of spills:
 - Keep a drip pan under the vehicle while you unclip hoses, unscrew filters, or remove other parts. Use a drip pan under any vehicle that might leak while you work on it to keep splatters or drips off the shop floor.
 - Promptly transfer used fluids to the proper waste or recycling drums. Don't leave drip pans or other open containers lying around.
 - Keep drip pans or containers under vehicles or equipment that might drip during repairs.
 - Do not change motor oil or perform equipment maintenance in non-appropriate areas.
- Monitor parked vehicles closely for leaks and place pans under any leaks to collect the fluids for proper disposal or recycling.

Parts Cleaning

- The City uses safety Kleen services for all parts washing services.
- Do all liquid cleaning at a centralized station so the solvents and residues stay in one area.
- Discharge wastewater generated from steam cleaning and pressure washing to an appropriate treatment control that is connected to a blind sump. Non-caustic detergents should be used instead of caustic cleaning agents, detergent-based or water-based cleaning systems in place of organic solvent degreasers, and non-chlorinated solvent in place of chlorinated organic solvents for parts cleaning
- Locate drip pans, drain boards, and drying racks to direct drips back into a solvent sink or fluid holding tank for reuse.

Inspection

- Regularly inspect vehicles and equipment for leaks, and repair immediately.
- Make sure incoming vehicles are checked for leaking oil and fluids. Apply controls accordingly.

Training

- Train employees and contractors in the proper handling and disposal of engine fluids and waste materials.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures (You can use reusable cloth rags to clean up small drips and spills instead of disposables; these can be washed by a permitted industrial laundry. Do not clean them at home or at a coin-operated laundry business). The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Keep your Pollution Incident Prevention Plan (PIPP) up to date, and implement accordingly.
- Place adequate stockpiles of spill cleanup materials where they are readily accessible.
- Clean leaks, drips, and other spills with as little water as possible. Use rags for small spills, a damp mop for general cleanup, and dry absorbent material for larger spills.
- Use the following three-step method for cleaning floors:
 - Clean spills with rags or other absorbent materials
 - Sweep floor using dry absorbent material
 - Mop the floor. Mop water may be discharged to the sanitary sewer via a toilet or sink.
- Remove absorbent materials used for cleaning small spills promptly and properly.
- Do not saturate rags or absorbent material to eliminate need for disposal of spilled material as hazardous waste.

2.5 Outdoor Container Storage SOP

Description

Accidental releases of materials from above ground liquid storage tanks, drums, and dumpsters present the potential for contaminating stormwater with many different pollutants. Tanks may store many potential stormwater runoff pollutants, such as gasoline, aviation gas, diesel fuel, ammonia, solvents, syrups, etc. Materials spilled, leaked, or lost from storage tanks may accumulate in soils or on other surfaces and be carried away by rainfall runoff. These source controls apply to containers located outside of a building used to temporarily store liquid materials and include installing safeguards against accidental releases, installing secondary containment, conducting regular inspections, and training employees in standard operating procedures and spill cleanup techniques.

<p><u>Objectives</u></p> <ul style="list-style-type: none"> ▪ Cover ▪ Contain ▪ Educate ▪ Reduce/Minimize ▪ Product Substitution <p><u>Targeted Constituents</u></p> <p>Sediment</p> <p>Nutrients ✓</p> <p>Trash</p> <p>Metals ✓</p> <p>Bacteria</p> <p>Oil and Grease ✓</p> <p>Organics ✓</p> <p>Oxygen Demanding ✓</p>

Pollution Prevention

- The City of Mason does not have outdoor container storage. Dumpsters are covered under waste handling and disposal.

2.6 Outdoor Equipment Maintenance SOP

Description

Outside process equipment operations and maintenance can contaminate stormwater runoff. Activities, such as grinding, painting, coating, sanding, degreasing or parts cleaning, landfills and waste piles, solid waste treatment and disposal, are examples of process operations that can lead to contamination of stormwater runoff.

<p><u>Objectives</u></p> <ul style="list-style-type: none"> ▪ Cover ▪ Contain ▪ Educate ▪ Reduce/Minimize ▪ Product Substitution <p><u>Targeted Constituents</u></p> <p>Sediment ✓</p> <p>Nutrients</p> <p>Trash ✓</p> <p>Metals ✓</p> <p>Bacteria</p> <p>Oil and Grease ✓</p> <p>Organics ✓</p> <p>Oxygen Demanding</p>

Pollution Prevention

- The City of Mason requires these activities are contained in a building where the floor drains to the sanitary sewer.

2.7 Outdoor Storage of Raw Materials SOP

Description

Raw materials, by-products, finished products, containers, and material storage areas exposed to rain and/or runoff can pollute stormwater. Stormwater can become contaminated when materials wash off or dissolve into water or are added to runoff by spills and leaks. Improper storage of these materials can result in accidental spills and the release of materials. To prevent or reduce the discharge of pollutants to stormwater from material delivery and storage, pollution prevention and source control measures, such as minimizing the storage of hazardous materials on-site, enclosing or covering materials, storing materials in a designated area, installing secondary containment, conducting regular inspections, preventing stormwater run-on and runoff, and training employees and subcontractors must be implemented.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment ✓
Nutrients ✓
Trash ✓
Metals
Bacteria
Oil and Grease ✓
Organics ✓
Oxygen Demanding ✓

Pollution Prevention

- The City of Mason does have outdoor storage of raw materials (sand and gravel). They are stored in our materials storage yard at the DPW maintenance facility. This yard does have a silt fence around the back side of the yard to protect any material from leaving the site.

2.8 Waste Handling & Disposal (Solid Waste) SOP

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing run-on and runoff.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment ✓
Nutrients ✓
Trash ✓
Metals ✓
Bacteria ✓
Oil and Grease ✓
Organics ✓
Oxygen Demanding ✓

Pollution Prevention

- Dumpsters are inspected on a regular basis; trash receptacles at the park facilities are emptied and inspected on a regular basis, replacement is necessary when the receptacle may have a leak or other damage.

- The City of Mason recycles materials whenever possible.
- The City of Mason also participates in a program to recycle prescription drugs to keep this waste stream out of our wastewater discharge which ends up in surface water.

Protocols

- Covered storage containers with leak proof lids are used and supplied by Granger.
- Storage containers are checked weekly for leaks and to ensure that lids are on tightly. Any that are leaking, corroded, or otherwise deteriorating are replaced.
- Storage areas are swept and cleaned regularly. In paved areas, a hose is not used to clean the area to avoid runoff to a storm drain.
- Disposal of rinse and wash water from cleaning waste containers is released into a sanitary sewer inside the maintenance facility.
- Waste from damaged containers is transferred into safe containers and the damaged container is scheduled for replacement.
- Special care is taken when loading or unloading wastes to minimize losses.

Controlling Litter

- A sufficient number of litter receptacles are used for each facility.
- Pet waste is encouraged to be placed in the trash through the use of signage.
- The City supplies pet litter bags at each park and along the river walk trail in the City of Mason.

2.9 Building & Grounds Maintenance SOP

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, and abnormal pH. The following protocols will prevent or reduce the discharge of pollutants to stormwater from building and grounds

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria ✓
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding ✓

maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Pollution Prevention

- The City of Mason uses safe alternative products when possible (see 2.11 Safer Alternative Practices).
- Proper lawn management and landscaping is practiced, including the use of native vegetation.
- A riparian buffer at city facilities is maintained appropriately by mowing once a year, hand weeding out invasive species and other weeds and maintaining native plants in the buffer. “No Mow” signs also help educate residents about the importance of a buffer.

Protocols

Washing

- All washing is conducted inside the maintenance facility. If the object cannot be washed inside, it is transported to a commercial car wash which drains to the sanitary sewer.

Landscaping Activities

- Chemicals (insecticide, herbicide, or fertilizer) are not applied directly to surface waters, unless the application is approved and permitted by the state.
- Mulch is used a control measure on exposed soils.
- The sports fields at city parks and the Administrative Offices are both irrigated. Soil is checked regularly to make sure there is not over watering.
- Irrigation schedules are set so pesticides will not be washed away and to minimize non-stormwater discharge.
- Temporarily stockpiled material is stored inside the maintenance facility away from watercourses and drain inlets.
- Grass clippings that fall on sidewalks during mowing are blown back on to the mowed area, other grass clippings are left on the mowed area to mulch.

- The City of Mason contracts with Arbor Lawn and Tree Professionals for all fertilizer, pesticide, and herbicide and insecticide management. Arbor lawn is a responsible company following the State Law restricting the use of phosphorus fertilizer.

Building Repair, Remodeling, and Construction

- The City of Mason uses ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly disposes of collected material daily.
- The cleaning of paint brushes and tools covered with water-based paints are conducted in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials are cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.

Inspection

- Irrigation systems are inspected periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.

2.10 Parking Lot Maintenance SOP

Description

Parking lots can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges.

Pollution Prevention

- The City of Mason public works staff maintains all City parking lots.
- The City sweeps facility parking lots once a year.
- Inspections of the catch basins are done by sections within the City, east side of the city then west side of the city. After inspections are completed proper cleaning is scheduled in that year.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria ✓
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding ✓

Protocols

- The parking lot is kept clean and orderly. Debris is removed in a timely fashion.
- An adequate number of litter receptacles are used.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Parking lot repair which consists of concrete, asphalt, and seal coat are conducted during dry weather to prevent stormwater runoff contamination.
- Nearby storm drain inlets and manholes are covered and sealed (with waterproof material or mesh) before applying seal coat, slurry seal, etc., where applicable. Covers are left in place until the job is complete and until all water from emulsified oil sealants has drained or evaporated.
- City of Mason staff receives training on storm water pollution prevention practices, street sweeping and catch basin maintenance during the employee training.

2.11 Safer Alternative Products SOP

Description

Using less harmful products is important. Alternatives exist for most product classes including chemical fertilizers, pesticides, cleaning solutions, janitorial chemicals, automotive and paint products, and consumables (batteries, fluorescent lamps).

Pollution Prevention

- The City of Mason contracts with the Lansing Sanitary Supply for all general cleaning supplies (degreaser, window cleaners, etc.). Lansing Sanitary Supply provides innovative product solutions to the City and provides information about being pro-active in the environmental solution by using the complete line of Green Seal Certified and Bio-Renewable products from Spartan Chemical.

Objectives	
▪ Educate	
▪ Reduce/Minimize	
▪ Product Substitution	
Targeted Constituents	
Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓
Oxygen Demanding	

2.12 Road and Street Maintenance SOP

Description

Streets, roads, and highways are significant sources of pollutants in stormwater discharges, and operation and maintenance (O&M) practices, if not conducted properly, can contribute to the problem. Stormwater pollution from roadway and bridge maintenance should be addressed on a site-specific basis.

Approach

Pollution Prevention

- The City does perform road and street maintenance.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).
- Recycle paint and other materials whenever possible.

Protocols

Street Sweeping and Cleaning

- Maintain a consistent sweeping schedule.
- Perform street cleaning during dry weather if possible.
- Avoid wet cleaning or flushing of street, and utilize dry methods where possible.
- Maintain cleaning equipment in good working condition and purchase replacement equipment as needed. Old sweepers should be replaced with new technologically

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment ✓
Nutrients
Trash ✓
Metals ✓
Bacteria
Oil and Grease ✓
Organics ✓
Oxygen Demanding ✓

advanced sweepers (preferably regenerative air sweepers) that maximize pollutant removal.

- Operate sweepers at manufacturer requested optimal speed levels to increase effectiveness.
- Regularly inspect vehicles and equipment for leaks, and repair immediately.
- Keep accurate logs of the number of curb-miles swept and the amount of waste collected.
- Dispose of street sweeping debris and dirt at a landfill.
- Do not store swept material along the side of the street or near a storm drain inlet.
- Keep debris storage to a minimum during the wet season or make sure debris piles are contained.

Street Repair and Maintenance

Pavement marking

- Schedule pavement marking activities for dry weather.
- Develop paint handling procedures for proper use, storage, and disposal of paints.
- Transfer and load paint and hot thermoplastic away from storm drain inlets.
- Provide drop cloths and drip pans in paint mixing areas.
- Properly maintain application equipment.
- Street sweep thermoplastic grindings. Yellow thermoplastic grindings may require special handling as they may contain lead.
- Use water based paints whenever possible. If using water based paints, clean the application equipment in a sink that is connected to the sanitary sewer.
- Properly store leftover paints if they are to be kept for the next job or dispose of properly.

Concrete installation and repair

- Schedule asphalt and concrete activities for dry weather.
- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place sand bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain.
- Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- When making saw cuts in pavement, use as little water as possible and perform during dry weather. Cover each storm drain inlet completely with filter fabric or plastic during the sawing operation.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Patching, resurfacing, and surface sealing

- Schedule patching, resurfacing and surface sealing for dry weather.
- Stockpile materials away from streets, gutter areas, storm drain inlets or watercourses.
- Pre-heat, transfer or load hot bituminous material away from drainage systems or watercourses.
- Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and maintenance holes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from covered maintenance holes and storm drain inlets when the job is complete.
- Prevent excess material from exposed aggregate concrete or similar treatments from entering streets or storm drain inlets. Designate an area for clean up and proper disposal of excess materials.

- Use only as much water as necessary for dust control, to avoid runoff.
- Sweep, never hose down streets to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains.

Equipment cleaning maintenance and storage

- Inspect equipment daily and repair any leaks. Place drip pans or absorbent materials under heavy equipment when not in use.
- Perform major equipment repairs at the corporation yard, when practical.
- If refueling or repairing vehicles and equipment must be done onsite, use a location away from storm drain inlets and watercourses.
- Clean equipment including sprayers, sprayer paint supply lines, patch and paving equipment, and mud jacking equipment at the end of each day. Clean in a sink or other area (e.g. vehicle wash area) that is connected to the sanitary sewer.

Graffiti Removal

- Schedule graffiti removal activities for dry weather.
- Protect nearby storm drain inlets prior to removing graffiti from walls, signs, sidewalks, or other structures needing graffiti abatement. Clean up afterwards by sweeping or vacuuming thoroughly, and/or by using absorbent and properly disposing of the absorbent.
- When graffiti is removed by painting over, implement the procedures under Painting and Paint Removal above.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a landscaped or dirt area. If such an area is not available, filter runoff through an appropriate filtering device (e.g. filter fabric) to keep sand, particles, and debris out of storm drains.

Unpaved Roads and Trails

- Stabilize exposed soil areas to prevent soil from eroding during rain events. This is particularly important on steep slopes.

- Dust suppressants should be used to minimize airborne transfer of fine aggregates into the air.
- Quality aggregates should be used to minimize transfer of fine aggregates onto paved surfaces.
- For roadside areas with exposed soils, the most cost-effective choice is to vegetate the area, preferably with a mulch or binder that will hold the soils in place while the vegetation is establishing. Native vegetation should be used if possible.
- If vegetation cannot be established immediately, apply temporary erosion control mats/blankets; a comma straw, or gravel as appropriate.
- If sediment is already eroded and mobilized in roadside areas, temporary controls should be installed. These may include: sediment control fences, fabric-covered triangular dikes, gravel-filled burlap bags, biobags, or hay bales staked in place.

Non-Stormwater Discharges

Field crews should be aware of non-stormwater discharges as part of their ongoing street maintenance efforts.

- Identify location, time and estimated quantity of discharges.
- Notify appropriate personnel.

Training

- Instruct employees and subcontractors to ensure that measures to reduce the stormwater impacts of roadway/bridge maintenance are being followed.
- Use a training log or similar method to document training.
- Train employees on proper spill containment and clean up, and in identifying non-stormwater discharges.

Spill Response and Prevention and Recordkeeping

- Refer to SC-2, Spill Prevention, and Control & Cleanup.
- Keep your Pollution Incident Prevention Plan (PIPP) up to date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.

- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

De-icing

- Do not over-apply deicing salt and sand, and routinely calibrate spreaders.
- Near reservoirs and open drains, restrict the application of deicing salt and redirect any runoff away from reservoirs and open drains.
- Consider using alternative deicing agents (less toxic, biodegradable, etc.).

2.13 Salt Application and Storage SOP

Description

The application and storage of deicing materials, most commonly salts such as sodium chloride, can lead to water quality problems for surrounding areas. Salts, gravel, sand, and other materials are applied to highways and roads to reduce the amount of ice during winter storm events. Salts lower the melting point of ice, allowing roadways to stay free of ice buildup during cold winters. Sand and gravel increase traction on the road, making travel safer.

During road salt application, certain best management practices can produce significant environmental benefits. The amount of road salt applied should be regulated to prevent over-salting of motorways and increasing runoff concentrations. The amount of salt applied should be varied to reflect site-specific characteristics, such as road width and design, traffic concentration, and proximity to surface waters. Calibration devices for spreaders in trucks aid maintenance workers in the proper application of road salts. Alternative materials, such as sand or gravel, should be used in especially sensitive areas.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

- Sediment ✓
- Nutrients ✓
- Trash
- Metals ✓
- Bacteria
- Oil and Grease
- Organics ✓
- Oxygen Demanding ✓

Pollution Prevention

- The City only salts city facilities, parking lots and sidewalks.
- The City uses the minimum amount of salt needed to get the job done.

Protocols

- The City uses both dump truck applicators and hand-operated applicators. The truck applicator is calibrated according to manufacturer’s recommendations in the beginning of the season, and then is adjusted according to weather conditions.
- Snow is also manually removed from driveways, parking areas and sidewalks.
- Salt is brought by truck and loaded directly into the maintenance facility. The salt is dry, comes bagged and is stored inside to prevent a loss due to runoff for sidewalk clearing operations.
- Salt for street applications is brought in truck loads and stored in covered storage facilities. The parking lot where salt is transferred is swept after each delivery.
- After each salting event the salt is pushed back away from the facilities openings and then covered with a tarp. This action prevents salt runoff during rain events.
- Maintenance staff knows when to plow and reapply salt. The need for another salt application can be determined by watching melting snow kicked out behind vehicle tires. If the slush is soft and fans out like water, the salt is still working. Once the slush begins to stiffen and is thrown directly to the rear of vehicle tires, it is time to plow.
- City of Mason will send staff to attended training offered by the GLRC: Salt and Winter Best Management Practices when offered.

▪ 2.14 Landscape Maintenance SOP

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

<p><u>Objectives</u></p> <ul style="list-style-type: none"> ▪ Contain ▪ Educate ▪ Reduce/Minimize ▪ Product Substitution <p><u>Targeted Constituents</u></p> <p>Sediment ✓</p> <p>Nutrients ✓</p> <p>Trash ✓</p> <p>Metals</p> <p>Bacteria</p> <p>Oil and Grease</p> <p>Organics</p> <p>Oxygen Demanding ✓</p>
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Approach

Pollution Prevention

- The City conducts appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.
- The City uses mulching blades on all mowing equipment to cut down on nutrient needed to be added to landscapes.

Protocols

Mowing, Trimming, and Weeding

- Whenever possible the City uses mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- The city performs mowing at optimal times to avoid mowing if a significant rain event is predicted.
- The city uses mulching mowers where ever possible.
- The city utilized Granger for yard waste collection. The City also collects leaves in the fall and composts the leaves (see waste management section of this fact sheet).
- The city maintains temporarily stockpiles of compost at our compost center. These materials are kept away from watercourses. Storm water from the site perks into the ground.

Waste Management

- The city composts leaves, sticks, or other collected vegetation and disposes it at a permitted compost center or landfill. The city does not dispose of collected vegetation into waterways or storm drainage systems.
- The city reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.
- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.

- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles before use.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a Michigan qualified pesticide applicator.
- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-2, Spill Prevention, and Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.
- The Michigan Acts have imposed requirements on school districts regarding pesticide use in schools, public buildings and health care facilities. An IPM program must be in place. Also for schools and daycares, written notification must be sent to the parents or guardians of the children before pesticides are applied on school

property. All applicators must attend a training program approved by the Michigan Department of Agriculture.

2.15 Drainage System Maintenance SOP

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Pollution Prevention

- The City maintains parking lots at the City facilities and two retention ponds one at the water plant and one on the west side of Temple Street.
- Regular inspection of the system and structures is conducted during regular maintenance of the surrounding areas. Inspection sheets are on file (appendix A) and reported on as part of the progress reporting requirement.

Protocols

- Municipal staff regularly inspect facilities to ensure the following:
 - Immediate repair of any deterioration threatening structural integrity.
 - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
 - Stenciling of catch basins and inlets
- The city maintains the catch basins for the parking lots of the municipally owned facilities and Major and Local streets. The systems are inspected bi-annually and are cleaned on an as-needed basis since they are very low traffic areas.
- During routine maintenance of conveyance system and drainage structures field staff looks for evidence of illegal discharges or illicit connections:

Objectives

- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria ✓
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding ✓

- Is there evidence of spills such as paints, discoloring, etc?
 - Are there any odors associated with the drainage system
 - Record locations of apparent illegal discharges/illicit connections
 - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
 - Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- Storm drains have been stickered, where applicable, to prevent illegal disposal of pollutants.

2.16 Waste Handling & Disposal SOP

Description

It is important to control litter to eliminate trash and other materials in stormwater runoff. Waste reduction is a major component of waste management and should be encouraged through training and public outreach. Management of waste once it is collected may involve reuse, recycling, or proper disposal.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria ✓
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding ✓

Pollution Prevention

- The City works with Granger container to encourage recycling and works with Ingham County Health department for hazardous waste disposal.

Protocols

Solid Waste Collection

- Granger container collects and disposes all solid waste in the city.

- City staff regularly inspects solid waste containers for structural damage and requires the contractor to repair or replace damaged containers as necessary.
- The city requires secure solid waste containers; containers must be closed tightly when not in use
- The city promotes to the public that only appropriate solid wastes are added to the solid waste containers. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).

Controlling Litter

- The city provides litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Clean out and cover litter receptacles frequently to prevent spillage.

Illegal Dumping

Substances illegally dumped on streets and into the storm drain system and creeks include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clipping, and pet wastes.

- The City employs a code enforcement officer to inspect for trash being dumped and make work orders to clean up messes.

2.17 Water & Sewer Utility Maintenance SOP

Description

Although the operation and maintenance of public utilities are not considered chronic sources of stormwater pollution, some activities and accidents can result in the discharge of pollutants that can pose a threat to both human health and the quality of receiving waters if they enter the storm drain system. Sewage incident response and investigation may involve a coordinated effort between staff from a number of different departments/agencies. Cities that do not provide maintenance of water and sewer utilities must coordinate with the contracting agency responsible for these activities and ensure that these model procedures are followed.

<u>Objectives</u>	
▪ Cover	
▪ Contain	
▪ Educate	
▪ Reduce/Minimize	
<u>Targeted Constituents</u>	
Sediment	✓
Nutrients	✓
Trash	
Metals	
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Pollution Prevention

The City owns the sanitary collection system and pump stations. The City keeps records of regular sewer maintenance and preventative maintenance.

2.18 Reporting and Recordkeeping SOP

As applicable, the City will maintain records demonstrating successful implementation of SOPs. Recordkeeping may include training, site inspection and maintenance, and if applicable, monitoring. It is anticipated that site inspections will occur on an annual basis because of the minimal amount of operations occurring at the City level.

The City of Mason is required under the Phase II General NDPES Permit, to submit progress reports to the MDEQ on October 1 of every other year, or as otherwise required. Specific reporting requirements will include:

- Program implementation status.
- Summary of stormwater activities performed.
- Results of information collected, such as monitoring data.
- Summary of proposed stormwater activities for the next reporting cycle.
- Changes made in BMP selection.
- Changes in stormwater management personnel.
- Changes made in program or measurable goals.

The City will update/revise this plan 30 days following the addition or removal of a facility or stormwater structural control.

Appendix A: City of Mason Inspection Sheet for Stormwater Structures

WET POND	
Management Objectives	Maintenance Requirement
<p>Effective for WO improvements for sites in excess of 10 acres; Provide for stream bank and flood protection; Remove metals, nutrients and organic through sedimentation (during first 24 hours); Phosphorus removal (requires long term retention or chemical treatment); Enhance habitat; Promote green space; May also be used for fire suppression in areas not served by public water supplies; Aesthetics.</p> <p style="text-align: center;">Design Components</p> <p>Velocity and erosion control at inlet and outlet; Sediment forebay (recommended to maximize useful life); Varying pond depth to enhance pollutant removal and control plant growth; Maximum residence time to enhance sediment removal; Bench for safety; Vegetative buffer (width variable); Continual flow through system</p>	<p>Embankment and outfall stabilized; No Erosion (inspects annually during dry weather and repair as needed).</p> <p>Inspect during spring runoff for damage caused by excessive flow (schedule repairs as soon as conditions allow).</p> <p>Emergency spillway or overflow pipe intact; Access by maintenance vehicles maintained (repair as needed).</p> <p>Sediment level in forebay (schedule cleaning when capacity is diminished by 25%).</p> <p>Multi-stage outlet (if equipped) sound; No piping or structural damage.</p> <p>Schedule dredging of deep pool every 10 to 15 years. Extended life possible with adequate sediment controls in stormwater collection area and regular forebay maintenance. Sediment removed during cleaning will contain nutrient "bank" which should be disposed of on site if space permits.</p> <p>Maintain peak aquatic health by promoting emergent plants in bench area and shrubs near the waterline on side slopes.</p> <p>Algae blooms controlled. Control measures include dye treatment to reduce photosynthesis, mechanical mixing devices (solar powered windmills, etc), and barley straw.</p>

required to control thermal fluctuation; Aesthetic enhancements (walking trails, etc.); Permanent access to overflow drain; Informational signs.

Maintenance Objective

Maintain WQ abilities by protecting permanent pool from sedimentation.



To enhance phosphorus removal in the permanent pond, treat with chemicals to promote precipitation (optional).

Pedestrian access only to shallow pool area for safety (initiate controls as needed).

If used for fire suppression, hydrant area stabilized.

Burrowing animal and insects controlled; No trash.

Signage intact.

