

H A M B L E N C O U N T Y



Employee Training Manual

Pollution Prevention and Good Housekeeping Practices for Municipal Operations

Table of Contents

Summary

Introduction

Creating a Pollution Prevention/Good Housekeeping Program

Potential Stormwater Pollutants

Common Stormwater Polluting Activities

Stormwater Pollution Prevention Plans

List of Common Best Management Practices (BMPs) Topics

- *Alternatives to Conventional Products*
- *Employee Training*
- *Hazardous Materials Storage*
- *Illicit Discharge and Illegal Dumping Control*
- *Internal Auditing*
- *Landscaping and Lawn Care*
- *Material Management*
- *Litter and Debris Pick up*
- *Proper Automobile/Equipment/Vehicle Maintenance*
- *Roadway and Bridge Maintenance*
- *Septic System Controls*
- *Spill Prevention and Response*
- *Public Storm Drain System*
- *Used Oil Generation and Recycling*
- *Vehicle Washing*
- *Vehicle Fueling*
- *Winter Salt Application and Storage*

Appendix A: Site Visit Checklists

Appendix B: Spill Response Forms

Stormwater Fact Sheets

Summary

The purpose of this manual is to provide assistance to municipalities subject to stormwater permitting requirements. Pollution Prevention/Good Housekeeping Minimum Control Measure requires municipalities to train employees about pollution prevention practices.

Employees using this manual will receive an introduction to Pollution Prevention/Good Housekeeping, learn how to begin a pollution prevention program at their facility, and receive guidance on a series of **Good Housekeeping Practices (GHPs)** and **Best Management Practices (BMPs)**. This manual should help the employee know when to apply these practices in their work.

As part of the MS4 Stormwater Program, the County is required to develop and implement an operations and maintenance program to prevent or reduce pollutant runoff from County operations.

Introduction

EPA Requires Phase II Municipalities to Implement Six Minimum Control Measures:

Public
Education
and
Outreach

Public
Participation/
Involvement

Illicit
Discharge
Detection
and
Elimination

Construction
Site Runoff
Control

Post-
Construction
Runoff
Control

Pollution
Prevention/
Good
Housekeeping

This manual provides municipalities with the information for common GHPs and BMPs. Each practice outlined in this manual is a way to reduce or eliminate stormwater pollution.

Creating a Pollution Prevention/ Good Housekeeping Program

Pollution Prevention/Good Housekeeping programs vary between municipalities based on specific needs. It is good for municipalities to determine what the main goal(s) will be for the program.

Consider the following questions to evaluate the specific need for your jurisdiction:

What municipal operations are conducted within the jurisdiction?

What stormwater pollutants are associated with these operations?

Who manages the operations or facilities for the jurisdiction?

Which facilities or operations require the most attention for stormwater management or have the most influence on water quality?

Are there any pollutants found in the jurisdiction's streams?

What pollution prevention/GHPs should be implemented?

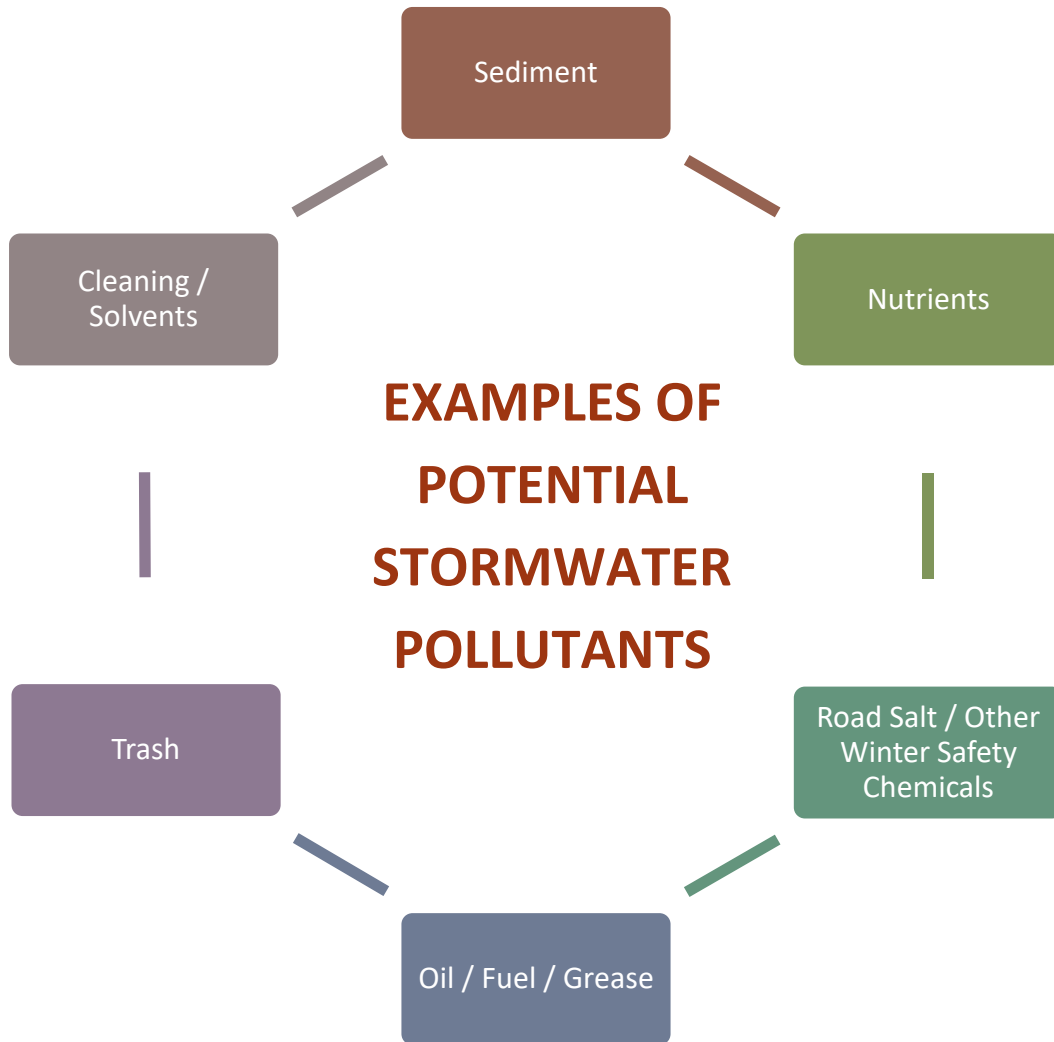
Do you have a point-person at each facility who will oversee the implementation of these practices?

How much does the program cost and what is/will be the budget for the program?

How should monitoring and evaluation of the program be administered?

Because different BMPs protect stormwater from different pollutants or are associated with specific municipal practices, answering these questions allows municipalities to determine which BMPs to implement and which BMPs will likely be ineffective. Ideally, all relevant BMPs would be implemented to prevent future problems from developing; this is not always practical or economical.

Potential Stormwater Pollutants



Sediments are often neglected as a stormwater pollutant. Sediments, particularly from industrial and agricultural areas, may contain heavy metals, toxic residues, or bacteria. Metal and toxins accumulate in fish and harm aquatic life. Sediments also cause cloudiness (known as turbidity), which impair fish respiration and reduce light penetration affecting productivity. Large amounts of sediment reduce water depth limiting the area the wildlife to inhabit.

Nutrients are a significant source of stormwater pollution. Over-fertilizing lawns allows nutrients not used by grass or plants to wash into storm drains. Excess nutrients cause eutrophication to occur, which means the water body produces more plant-life than needed. Algae are a sign of eutrophication that leads to odors and fish kills.

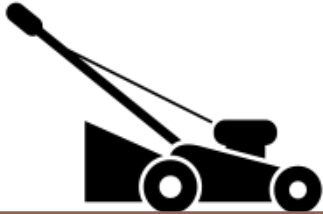
Road Salt is applied in winter to melt snow and ice so it is safe to drive. In the spring when snow melts completely, road salt gets transported to streams. Excess chlorine in streams increases conductivity and harms fish and vegetation.

Oil in streams is usually the result of improper disposal of oils during vehicle maintenance or oil leaks from vehicles. Oil is easily noticed because of the sheen it produces on the surface of pools in streams.

Trash in streams can be harmful, but it is more of a concern to aesthetics. Trash often contains all of the aforementioned pollutants. Plastics, glass, and aluminum cans that are dumped in streams could be recycled.

Cleaning/Solvents are used to remove oil, grease, solder flux, and other contaminants. Examples of solvents include turpentine and benzene, which is commonly used to remove paint. Exposure to these chemicals can be harmful.

Common Stormwater Polluting Activities



Grounds Keeping



Construction Work



Vehicle Maintenance



Washing Vehicle
in Driveway



Outdoor Storage
and Handling

Stormwater Pollution Prevention Plans

What is a SWPPP (Stormwater Pollution Prevention Plan)?

A SWPPP is a fundamental requirement of stormwater permits. As runoff flows over land and impervious surfaces, it accumulates debris, chemicals, sediment, etc. that could adversely affect water quality if the runoff discharges are untreated.

SWPPP are divided into 4 major phases:

Planning and Organization:

- Jurisdictions or municipal facilities should designate a point-person. This person is responsible for implementing the SWPPP for each municipal facility.

Assessment:

- During the assessment phase, staff should review its facility to determine which facilities have the potential to cause stormwater pollution. A map should be created of each potentially polluting facility that includes storm drains, sensitive areas, and areas where best management practices (BMPs) should be implemented. A database of all past spills or stormwater pollution events and stormwater quality data should be created.

Identify BMPs:

- Not all BMPs can be used at all facilities. Jurisdictions should evaluate which BMPs will be appropriate and efficient on a site-specific basis. Nearly all facilities benefit from Good Housekeeping Practices (GHPs), which are daily activities/guidelines that all employees follow to prevent stormwater pollution.

Evaluation:

- No program is complete without monitoring and evaluation. Monitoring the implementation of BMPs allows a jurisdiction to update and improve its stormwater management program.

List of Common Best Management Practices (BMPs) Topics

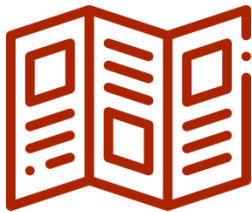
- Employee Training
- Hazardous materials storage
- Illicit discharge and illegal dumping controls
- Internal Auditing
- Landscaping and lawn care
- Pest waste collection
- Proper automobile/equipment/vehicle maintenance
- Roadway and bridge maintenance
- Septic system controls
- Vehicle washing
- Spill Response and prevention
- Storm sewer system cleaning
- Winter salt application and storage

1. Employee Training

The Pollution Prevention/Good Housekeeping minimum control measure requires that all municipal employees undergo training for pollution prevention. This training keeps employees aware of the everyday duties that they can perform during the course of their workday to improve stormwater management.

Employees responsible for operations & maintenance of municipal facilities shall be provided sufficient training to identify and prevent or reduce stormwater pollution. New employees should be trained upon their hire, or at least within 6 months of their hire date. Existing employees should have training or re-training at least once every 5 years.

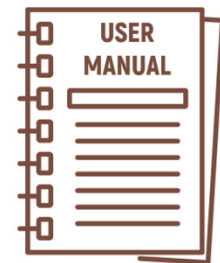
Training Ideas:



Pamphlets



Presentations



Bound Training
Manuals



Shop Posters



Flyers Attached
to Paystubs

2. Hazardous Materials Storage

Hazardous materials not only pose a risk to streams, but are dangerous to human beings. Storing materials properly, especially hazardous materials, is a very useful way to protect stormwater and those who work in municipal facilities. Proper storage prevents spills or at least contains any spills that may occur.

(Danger: Chemical Storage sign “Warning” or Danger” signs notifying employees of hazardous chemicals decrease the risk of spills because employees are reminded to take extra care when working in the area).

Provides
Sufficient Aisle
Space

In a Low Traffic
Area

Use Secondary
Containment

Has Adequate
Signage



Inspect for leaks and log all findings for facilities at least once a week and work to reduce the number of spills by a certain amount over time.

3. Illegal Discharge and Illegal Dumping Control

Illegal dumping control is necessary to help reduce the number of pollutants entering the storm drains, where only stormwater is supposed to go. While illegal dumping is addressed under the third minimum control measure, Illicit Discharge Detection and Elimination (IDDE), municipal employees can approach IDDE during the course of their Pollution Prevention/Good Housekeeping activities. Involving the public in clean-up or watching for illegal dumping can help fulfill the Public Participation/Involvement measure as well. Jurisdictions should offer a way to report illegal dumping from residents, such as a hotline, website, or e-mail address.

County employees can look for signs of pollution or dumping during maintenance. **If any spills or dumping into storm drains or streams is apparent, notify your supervisor or stormwater "point-person" contact.** Municipalities should increase awareness of stormwater issues by posting signage near risk storm drains.

As county employees, you should look for:

"No Dumping" Signs

"No Dumping"
Storm Drain Markers

Trash/debris near
storm drains inlets
or on road
/roadsides

Staining, such as
from paints or fluids
leading into storm
drains

Suspicious activities
near storm drain
inlets

Unusual odors or
colored water



4. Internal Auditing

Audits are the way the EPA gauges municipalities' compliance with their stormwater permit. Audits typically involve site visits, questioning employees for their knowledge on a subject or issue, reviewing documentation that shows what program the municipalities has participated in, and judging whether a facility is in compliance with their stormwater permit. By conducting a self-audit, municipalities can be ready for the real thing.

Methods of Self-Audit:

- ✓ Familiarize employees with the process
- ✓ Highlight any shortcomings in the program
- ✓ Allow time to correct problems
- ✓ Allow time to organize documentation
- ✓ Require checklists and photographs to log what facilities are doing

5. Landscaping and Lawn Care

Landscaping and lawn care practice have a significant impact on stormwater runoff. Conventional lawn care practices often include watering too frequently, over-fertilizing, and the use of pesticides/herbicides to rid lawns of unwanted pests and nuisance or invasive plants.

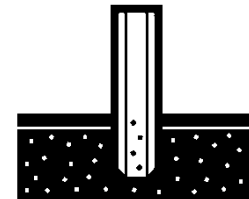
The recommended practices for stormwater-friendly lawn care include:



Choose Native Plants



Regular Maintenance



Test Soils



**Lay mulch at least 3 inches thick.
This keeps soil moist, prevents weeds, and prevents soil erosion.**



**Install Water Bags On Trees
And Use Rain From Rain
Barrels To Water Lawns**



**Mixing Compost with Soil
During Planting**

Lawn Cutting

The height of the grass after cutting should be based on the specific grass species. Cutting too low of a height can damage the grass causing it to die which then can lead to soil erosion.

The use of weed eaters to cut grass is discouraged due to scalping of the grass which can lead to soil erosion.

The use of weed eaters on a slope too steep for a mower is acceptable if the grass is cut higher than a mower would so that scalping does not occur.

If a stream is located on the site, the preference is for the area along the stream to not be mowed. However, if it needs to be mowed, it should be mowed to a height several inches higher than that of the regular lawn height.

Fertilizer and Pesticide Use

The use of fertilizers and pesticides shall be in accordance with manufacturer's specifications.

The mixing and/or loading of equipment should occur away from a stream or storm drain system in case of a spill. Any spills shall be cleaned up immediately.

Do not apply at a rate greater than specified by the manufacturer or apply before a rain event of significant magnitude that the stormwater would wash the material off the site.

Do not spray when it is windy. Containers for fertilizers, pesticides, and other related items shall not be left outside where they would be exposed to stormwater.

6. Materials Management

Material management is the way chemicals, products, or other materials are chosen, purchased, stored, handled, used, and eventually disposed of. Stormwater is at a major risk of contamination from improper materials management techniques, especially during outdoor activities. All materials should be stored in closed containers or tanks and shall be under cover as much as possible.

! No open containers are allowed and all containers shall be clearly labeled as to contents !

Proper Storage Includes:

- Labeling
- Secondary Containment
- Indoor Storage (Where Possible)
- Hazardous Materials Labeling

Proper Handling & Use Tips

- Do Not Overload Pallets/Handling Equipment
- Get Help to Carry Large Objects
- Secure Materials When Not in Use
- Document How Much Product was Used (to Recognize Leaking)

Proper Disposal Tips

- Never Dispose of Products in Storm Drains
- Dumpsters Should Have Closed Lids and Should NOT be Overfilled
- Label Waste Containers Properly and Recycle Products when Possible

Waste oil should/may be re-used on-site as an energy source. Any used materials no longer needed including **excess waste oil not used for energy production** should be disposed of at least **semi-annually** in accordance with all State and Federal regulations.

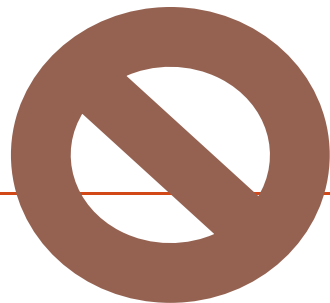
All hazardous material such as empty or partially empty paint cans, oil cans, filters, cleaning fluid, etc. shall be disposed of by taking them to a permitted hazardous material disposal site in accordance with State laws. All hazardous materials shall be stored in accordance with manufacturer's specifications and should be stored in a location where rainfall or stormwater runoff will not come in contact with them.

The washing of paint tools or other hazardous materials equipment must be performed and disposed of in accordance with all State and Federal regulations. The cleaning residue from such equipment is hazardous and cannot be discharged onto the ground or into a pond, storm drain, ditch, stream, other stormwater conveyance, or to Waters of the State including both surface and groundwater and shall be disposed of in accordance with State laws.

REMEMBER:

Litter, construction materials, construction debris, construction chemicals, and other hazardous materials should be stored in a manner that rainfall, stormwater runoff, or wind will not cause them to be a pollutant source for stormwater discharges.

7. Litter and Debris Pickup



Litter, construction materials, construction debris, construction chemicals, and other hazardous materials **SHALL NOT** be allowed to enter a pond, storm drain, swale, ditch, stream, other stormwater conveyance, or to Water of the State. This can be accomplished by screening outfalls, daily pickup or cleanup, storing inside a trailer and/or under cover, by limiting the time the materials are stored onsite, storing materials away from stormwater outfalls, and by other methods.

8. Proper Automobile/Equipment/Vehicle Maintenance



Vehicle maintenance and repair should occur under cover as much as possible. Any fluid spill or leak shall be cleaned-up immediately in accordance with the spill clean-up procedures. Absorbent materials shall be placed at critical areas within vehicle maintenance facilities such as around floor or pit drains to collect, trap, and absorb any spill or leak before it can leave the building. Floor drains in buildings should discharge to the sanitary sewer system and not to the storm drain system.

Proper Vehicle Maintenance:

Performing maintenance activities indoors

Limiting washing in maintenance bays and never washing maintenance bay floors with doors open

Disposing of waste materials (antifreeze, solvents, batteries, fuels, lubricants, etc.) or parts properly

Recycling spent fluids (such as motor oil) where possible

Fueling vehicles away from catch basins and streams

Proper automobile/equipment/vehicle maintenance

Regularly inspecting on-site vehicles for leaks

Clean-up equipment and proper waste storage containers are needed.

Waste clean-up equipment includes:



Absorbents for wet spills and corrosive materials

Brooms and dust pans/shovels for dry spills



Dumpsters or waste containers with closeable lids

9. Roadway and Bridge Maintenance



Existing roads and bridges require periodic maintenance. These maintenance activities often generate stormwater pollutants such as **heavy metals, sediments, solvents, oils and fuels.**

Here are some pollution prevention tips for road and bridge maintenance activities:

Always sweep or vacuum dry material wastes during saw cutting road stripe removal, or other activities that create dust/sediment

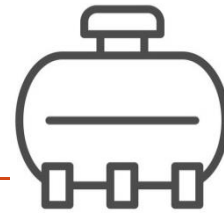
Use drip pans for paving machines and other equipment that may leak fluids

Do not apply road stripping paint during windy, wet, or rainy conditions

If wet saws must be used:

- Place drip pans under or watertight barriers around equipment when not in use
- Turn cooling water off when saw is off.
- Protect storm drains during use

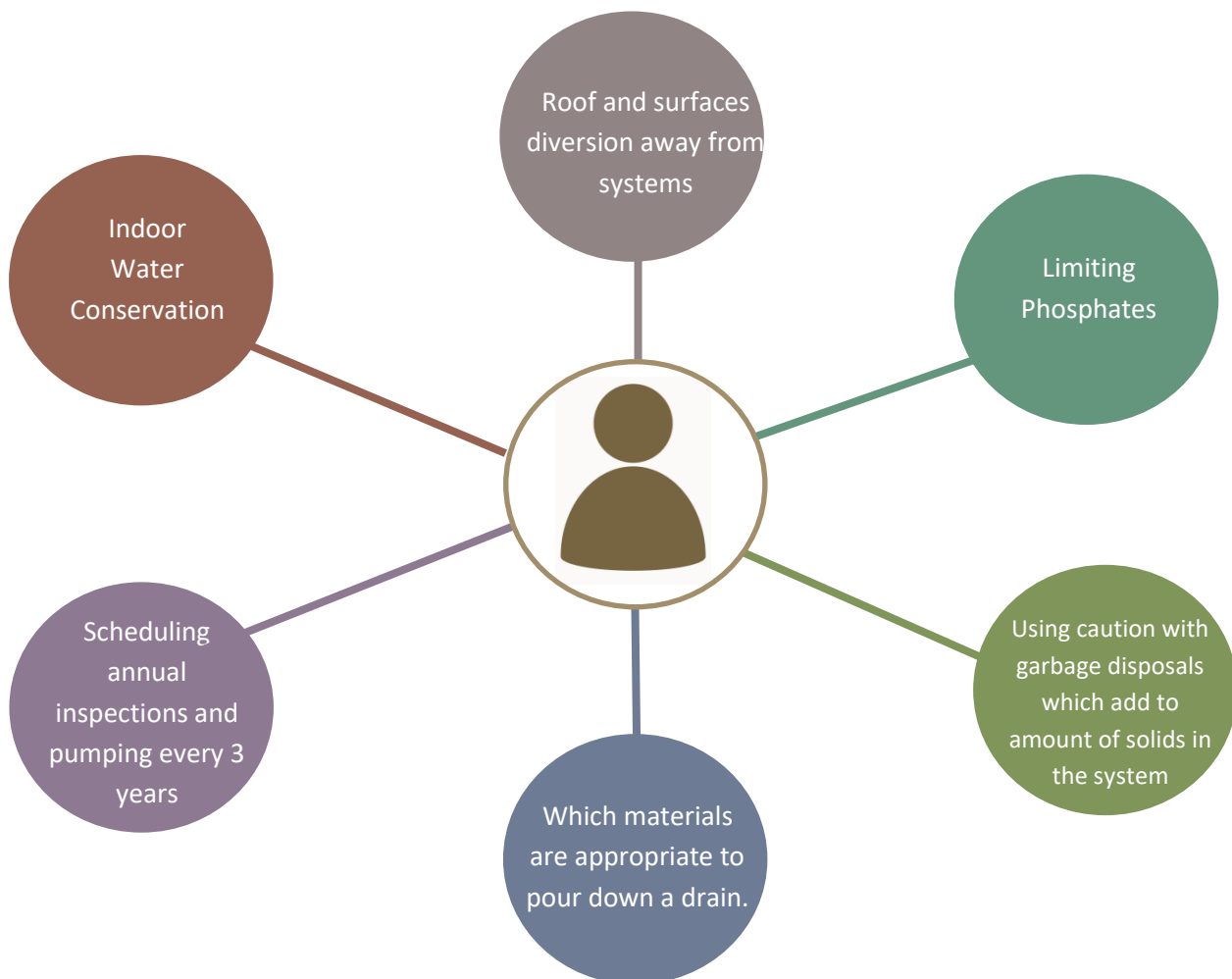
10. Septic System Controls



Many jurisdictions have residents with septic systems. With septic systems, wastewater from homes flows to an underground storage unit rather than a sanitary sewer. This storage unit allows solids to settle and the liquid to filter into the soil. By creating outreach programs on Good Housekeeping Practices for residents with septic systems, the jurisdiction will help prevent septic system failures, a major source of illicit discharges into streams.

Failed septic tanks can release large amounts of fecal matter and contaminants into stormwater and streams!

Outreach programs should educate residents on:



11. Spill Prevention and Response



Spill prevention and response is one of the most important Good Housekeeping Practices for municipal operations. In the course of daily activities, municipal employees handle, transport, load, and use products that can be harmful to our streams if they enter storm drains.

Prevention:

- **Maintain** sufficient aisle space in storage areas.
- **Stack items safely** at heights where materials are easily accessible.
- When working with liquids outdoors, **cover storm drains** with mats or berms prior to beginning work.
- **Do not overload** pallets, shelves, transportation equipment, or yourself with materials.
- **Refill materials** in secondary containment or indoors.
- Installing **leak detection devices**, overflow controls, and diversion berms.
- **Monitoring** storage units for leaks, cracks, rust, or other signs of structural degradation.

Response:

- **Post signs** on the spill response procedure in all municipal facilities.
- **Determine scope of spill.** It is containable by yourself or are there hazardous materials involved that require the fire department or Hazmat teams.
- **Remove the source of the spill.** Plug the hole or turn off equipment.
- **Protect stormwater** by containing the spill.
- **Notify** necessary employees, staff, or cleanup contacts.
- **Use spill absorbents** to clean up wet spills. Sweep up dry spills; never hose them!
- **Dispose** of the waste responsibly.
- **Restocking** used cleanup materials is an important, but often forgotten spill response practice.
- **Log** the spill in your records.

The used spill clean-up products should be stored in heavy plastic within a labeled waterproof container and stored under cover to prevent contact with stormwater. Any contaminated material from the clean-up shall be disposed of at least semi-annually in accordance with all State and Federal regulations.

It is very important that every employee be aware of these procedures in case the stormwater point person is not available. Proper spill response programs require regular training to remind employees of safety and cleanup procedures. Holding mock spill response training sessions can prepare employees for real spills.

12. Necessary Equipment



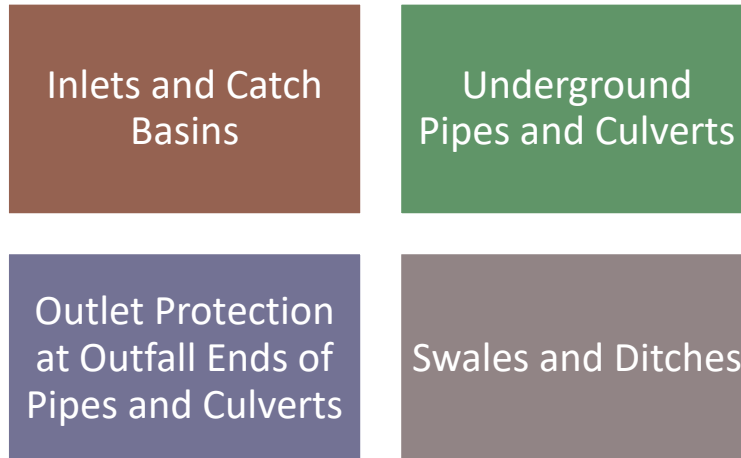
Every municipal facility should have spill response kits in all buildings on their facility and outdoors near fueling or loading stations. A spill kit contains:



Spill response programs should include proper documentation. When audits are performed, the EPA or auditing authority will want to know how many spills occurred on the site. They will want to know how the spill was handled and what has been done to prevent it from happening in the future. Have a standard form for all spills that include the date, what was spilled, where it was spilled, time of spill and of cleanup completion, what caused the spill, and who cleaned up the spill. This will allow your facility to update your spill response plan on a site specific basis.

13. Public Storm Drain System

The public storm drain system consists of the following components with public right of way:



Municipal storm systems need regular maintenance to work efficiently. When storm drains are clogged with large debris, such as leaves or trash, water cannot flow through the storm drain and streets become flooded.

Storm drains and pipes should be cleaned at least once a year for maintenance needs, accumulated solids, erosion, illicit discharges, and illegal connections.

Illicit Discharges and Illegal Connections

An illicit discharge into the storm drain system is essentially anything other than rainwater (“Only Rain Down the Drain”). In addition to accumulated debris, trash, and sediment, the County Personnel should look for evidence of illicit discharges such as petroleum products, chemicals, pet waste, etc. and report any findings to the County’s Stormwater Coordinator.

The County personnel should also look for any illegal connections to the storm drain system which could include pipes from building floor drains or drains from washing machines.

Inlets and Catch Basins

Remove and dispose of properly any accumulated sediment, debris, or trash from the grate or throat opening and from the interior of the structure. Look for signs of illicit discharge into the system such as an unknown pipe into the structure. Note any maintenance needs and schedule repairs to occur in a timely manner.

Underground Pipe and Culverts

Remove and dispose of properly any accumulated sediment, debris, or trash from the pipes. Note any maintenance needs and schedule repairs to occur in a timely manner. Inspect the entry and exit to culverts for signs of erosion around pipe. Inspect the exit of the pipes for any signs of erosion on the ground surface and provide or improve outlet protection such as rip rap. Schedule any needed repairs to occur in a timely manner.

Swales and Ditches

Remove and dispose of properly any accumulated sediment, debris, or trash from the conveyances. Inspect them for signs of erosion or bare soils. Schedule any needed repairs including stabilization of bare soils to occur in a timely manner.

14. Vehicle Washing

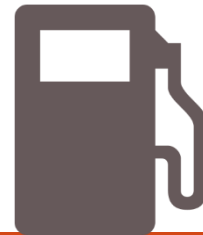


Municipal vehicles including fire trucks, emergency vehicles, and road maintenance fleets typically have sediments, oil, road salt, or other particles on them that end up in streams when they are washed or blown off the vehicles. Soap, detergents, and vehicle/equipment cleaners are often used in the washing process. These pollutants, especially detergents, can have harmful effects on streams. For these reasons, it is necessary to protect stormwater by washing vehicles in the appropriate location.

The ideal location for washing vehicles is at a commercial vehicle wash.

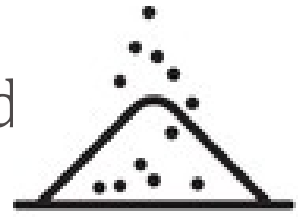
Commercial vehicle washes have the ability to recycle their water on-site as well as to contain water so it will not enter storm drain. If no commercial vehicle washes are available, then vehicles should be washed indoors (that will drain to sanitary sewers) or on grass/pervious surfaces.

15. Vehicle Fueling



Any onsite storage of fuel and subsequent fueling of vehicles shall occur in accordance with all State and Federal regulations. The fuel tank shall be installed in a manner that any leak can be contained on site. The fueling station shall be covered from rainfall and located so that stormwater runoff does not flow across the area. Spill clean-up kit and materials should be located at the fueling station

16. Winter Salt Application and Storage



Winter in cold climates means snow. For municipalities, that means snow removal. Snow removal typically involves the use of snow plows and road salt on roads or shovel and de-icers on sidewalks. But de-icers, especially those containing chlorine, are pollutants to our streams often resulting in fish and vegetation death. Salt can also damage roads by causing staining.

Salt domes should always be **covered and closed** when not loading salt.

Liquid de-icers should be **kept in secondary containment** until use.

No excess snow removal products should be dumped or drained into storm drains.

Salt trucks should **not be overfilled and should be covered when possible**. This reduces loss and saves on purchasing costs.

Spills should **be cleaned up completely**.

Salt, sand and de-icers storage should be covered to prevent rain from reaching the materials. The preferred method would be inside a structure with a roof and walls. However, if that is not possible, the material shall be entirely covered with an impermeable material (plastic tarp, for instance) secured to prevent it from blowing away. The location of the material storage shall also be outside of the flow path of stormwater runoff to prevent materials from being washed away.

Road salt spreader should be emptied completely when not in use or at the end of the snow season, especially if stored outdoors. Excess salt in spreaders can get washed out in rains.

Stormwater Fact Sheet



Don't Let Your Pet Pollute!

Pet waste left on the street or lawn does not just go away. It is often washed into storm drains, ditches, streams, rivers, and then into the lake. Kitty litter dumped outside can also be washed into drains and end up in the lake. Since stormwater is not treated, bacteria in pet waste can end up in rivers and lake from which we get our drinking water.

Why You Should Pick Up After Your Pet

- Cleaning up after a cat or dog is something we can all do to keep our water safe for fishing and swimming.
- Pet waste is not good lawn fertilizer; the bacterium in waste does more harm than good.
- Proper disposal of waste can prevent the spread of harmful bacteria and viruses from animal to humans.
- Organic matter in pet waste can degrade water quality. The decay of waste uses up dissolved oxygen and releases ammonia. This process can kill fish and other aquatic life.

What You Can Do

- Pick up pet waste from your yard. No one wants to play or eat outside in a yard fouled with pet waste. Simple scooping tools make this job easy.
- Carry disposable bags while walking your dog so you can pick up and dispose of waste properly.
- Encourage your neighbors and other pet owners to be responsible. Support projects that share information about pet waste and make pet waste pick up easier.

How Do You Dispose of Pet Waste Properly

- The ideal solution is to pick up after your dog and flush the waste in a toilet. That way the waste is treated before water returns to rivers and lakes.
- You can also put animal waste in your trash bin. Dispose of waste in the bag you collect it in. Just tie the bag tightly to avoid a spill.

What You Should Not Do

- Do not put pet waste in a catch basin, storm drain, or in the street.
- Do not add pet waste to compost bin. The compost pile will not get warm enough to kill disease-causing organisms.
- Do not use pet waste as lawn or garden fertilizer.

Remember, stormwater is not treated and goes directly into ditches, rivers, and lakes.

But we can all help protect our water supply by being careful about what gets in the stormwater!



H A M B L E N C O U N T Y



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