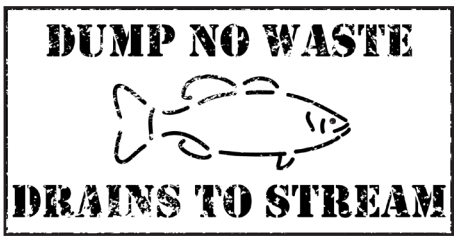
MS4: Combating Urban stormwater pollution

An Educational Series For Stream Teams To Learn and Collect

By Sarah Wright, MS4 Permitting Coordinator, MoDNR



Stormwater runoff is rainfall or melt from frozen precipitation flowing across the ground, picking up and carrying pollutants into our waterways. In natural systems, plants and soil filter this water. Since urban and suburban areas have large areas of land covered with pavement or buildings, stormwater is not allowed to soak into the ground. These impermeable surfaces cause the volume and velocity of stormwater runoff to increase, increasing flooding and destroying stream habitat.

Because storm drains empty directly to streams and rivers untreated, anything that enters a storm drain ends up in our water. Urban stormwater runoff includes pollutants such as:

- ◊ Heavy metals from roof shingles, tires, asphalt, vehicles;
- ◊ Pesticides and nutrients from lawns, landscaping, pet waste;
- ◊ Sediment from pavement breakdown, construction, industrial sites;
- ◊ Oil and grease from vehicles, spills, households;
- ◊ Pathogens and bacteria from pet waste, wildlife, sanitary sewer overflows, failing septic systems;
- ◊ Road salts, brine;
- ◊ Low dissolved oxygen from organic waste;
- ◊ Thermal pollution from impervious surfaces.

Because of these pollutants, stormwater runoff is now a leading source of stream impairment in urban areas. Urban populations are expected to grow nearly 70% by 2050, making urban stormwater runoff a leading environmental challenge now and for years to come.

In response to this increasing problem, the U.S. Environmental Protection Agency (EPA) began requiring National Pollutant Discharge Elimination System (NPDES) permit coverage under the Clean Water Act to address stormwater runoff from large urban areas. The **Municipal Separate Storm Sewer System (MS4)** permit is this federally mandated permit, administrated through the Missouri Department of Natural Resources (DNR). Missouri currently has 162 regulated MS4s.

If a population is greater than 10,000 or greater than 1,000 and in a Census-defined Urbanized Area, it may be designated as a regulated MS4. While rural or suburban areas have stormwater sewers, the population may not be dense enough to require MS4 regulations. Cities and counties are the most common MS4s, but publicly-owned institutions such as universities or military bases can be MS4s, too.

Separate Storm Sewer System refers to the collection of structures that gather and discharge stormwater. This includes inlets, ditches, basins, and pipes that carry stormwater to waterways without treatment.

The MS4 General Permit has six focus areas, called **Minimum Control Measures (MCMs)**. These MCMs are the elements that turn the municipality into a treatment facility. Some of these MCMs offer opportunities for Stream Teams to work with MS4s to protect water quality.

MCM 1: Public Education and Outreach

Because stormwater touches the whole community, increasing public

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stormwater awareness is very important. MS4s are required to develop education plans to inform residents about stormwater management and how they can make a difference. Common activities include creating informational flyers and providing presentations at schools or community events.

MCM 2: Public Participation and Involvement

Involving the public in stormwater-related activities and the development of the MS4's program is the goal of this MCM. Common activities include events like workshops, storm drain markings, and stream cleanups.

MCM 3: Illicit Discharge Detection and Elimination

This MCM requires keeping pollutants out of the storm sewer systems. Examples of illicit substances include organic waste, commercial vehicle washing, paint, oil, grease from restaurant grease traps, and dump sites among other things.

MCM 4: Construction Site Erosion Control

Poorly managed construction sites can add sediment to stormwater. MS4 activities include ensuring erosion and sediment control practices are installed correctly and maintained, along with requiring inspections to make sure the sediment stays on site.

MCM 5: Post-Construction Stormwater Management

The goal is making sure new developments do not further impact stormwater quality. The MS4 must ensure structural stormwater management facilities are installed and maintained properly. This MCM also encourages low impact development practices such as wooded areas, porous pavement, retention wetlands, and stream buffers.

MCM 6: Pollution Prevention and Good Housekeeping

This MCM requires reducing stormwater pollution from the maintenance yards, parks, and other facilities owned by the MS4. It also includes practices such as street-sweeping programs to capture stormwater pollutants before they get washed away, or a salt-reduction program to reduce the chlorides in the runoff.

In addition to the six MCMs, the permit holder also implements a **Stormwater Management Plan** to explain the exact details specific to their MS4 program. This management plan is created by the individual MS4 operators, and is unique to their community's stormwater program.

Stormwater runoff is the pollution created by our daily lives, and the MS4 permit creates ways for us to improve the quality of our stormwater. When these elements are implemented effectively, the results will be a significant reduction of pollutants discharged into our waters.

For a list of locations with Missouri MS4s, visit http://dnr.mo.gov/env/wpp/stormwater/docs/regulated-ms4.pdf. Additional information about the MS4 permits and programs can be found at https://dnr.mo.gov/env/wpp/stormwater/sw-local-gov-programs.htm.

Stream Team activities such as storm drain stenciling can be a great way to help MS4 permittees implement several Minimum Control Measures, including outreach and education, public participation, and pollution prevention. Fulton Stream Team 5254 has recruited several schools, scouts, and youth groups to help in these efforts.

Don't forget to send your questions to streamteam@mdc.mo.gov or call 1-800-781-1989.