MS4 Overview / MS4 Regionalization in Lycoming County

Lycoming County MS4 Coalition

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Presentation Outline

• Stormwater in PA
• MS4 Program Overview
• MCMs and other Permit Requirements
• Lycoming County MS4 Coalition
• Where We’re Headed
• Takeaways
• Questions
Stormwater in PA

- Stormwater runoff – one of the major sources of non-point source pollution in PA
- Runoff from impervious surfaces – 3rd leading cause of impairment to PA’s streams
Development = Runoff

Local Hydrologic Cycle

Evapotranspiration

Canopy Interception

Surface Runoff

Interflow

Baseflow

Before Construction

After Construction

Evapotranspiration

Surface Runoff

Interflow

Baseflow
Rain falls onto streets and sidewalks. Most of it becomes runoff.

Rain falls into trees and other green areas, so less of it becomes runoff.
Municipal Separate Storm Sewer Systems (MS4) Permit Program

- EPA → PA DEP → local permittees (munis + others)
- Phase I Permits: 1990s
  Large MS4s (Cities over 100,000)
- Phase II Permits: 2000s
  Small MS4s (Urbanized Areas)
- Renewed EPA attention: 2010s
- Heightened importance with Chesapeake Bay TMDL
MS4 Permit Program

• Polluted stormwater runoff is transported by MS4 and discharged (untreated) into local waterbodies

• Goals of MS4 permit program:
  – Reduce Nitrogen, phosphorus, and sediments
  – Slow down runoff velocity
  – Address localized impairments

• Velocity = Stream erosion

• Close to 1,000 MS4s in PA
MS4 Permit Requirements

- 6 Minimum Control Measures (MCMs)
- Sub-plans for MCMs
- Chesapeake Bay Pollutant Reduction Plan (CBPRP)
- Annual Reports
- DEP Inspections
- **Documentation!**
6 Minimum Control Measures (MCMs)

1. Public Education and Outreach Program
2. Public Involvement and Participation Program
3. Illicit Discharge Detection and Elimination Program
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management in New and Re-Development
6. Pollution Prevention/Good Housekeeping for Municipal Operations
MS4 Minimum Control Measures (MCMs)

MCM #1 PUBLIC EDUCATION & OUTREACH ON STORMWATER IMPACTS
BMP #1 Develop, implement, and maintain a written Public Education & Outreach Program (PEOP)
BMP #2 Develop and maintain lists of target audience groups present with areas served by your MS4. (Residents, developers, schools, municipal employees and commercial, industrial, and retailers businesses)
BMP #3 Annually publish at least one educational item on your Stormwater Management Program.
BMP #4 Distribute stormwater educational material to target audiences (Select & utilize at least two distribution methods in each permit year).

MCM #2 PUBLIC INVOLVEMENT/PARTICIPATION
BMP #1 Develop, implement, and maintain a written Public Involvement & Participation Program (PIP)
BMP #2 Prior to adoption of any ordinance (municipal permittees) or SOP (non-municipal permittees) required by this permit, provide adequate public notices and opportunities for public review, input, and feedback
BMP #3 Regularly solicit public involvement & participation from the target audience groups. This should include an effort to solicit public reporting of suspected illicit discharges. Assist the public in their efforts to help implement your SWMP. Conduct public meetings to discuss the on-going implementation on your SWMP. (Conduct at least one public meeting per year and present a summary of your progress, activities, and accomplishments with implementation of your SWMP.

MCM #3 ILLICIT DISCHARGE DETECTION & ELIMINATION (IDD&E)
BMP #1 Develop & implement a written program for the detection, elimination, and prevention of illicit discharges into your regulated MS4. Your program shall include dry weather field screening of outfalls for non-stormwater flows, and sampling of dry weather discharges for selected chemical & biological parameters. Test results shall be used as indicators of possible discharge sources.
BMP #2 Develop & maintain a map of your regulated small MS4. The map shall also show the location of all outfalls and the locations & names of all surface waters of the Commonwealth (e.g. creek, stream, pond, lake, basin, swale, channels that receive discharges from those outfalls.
BMP #3 In conjunction with the map updated at BMP #2(a) (either on the same map or different maps), new permittees shall show, and renewal permittees shall update, the entire storm sewer collection systems; including roads, inlets, piping, swales, catch basins, channels, & any other features of the permittee's storm sewer system including local boundary or watershed boundaries.
BMP #4 Following the IDD&E program created pursuant to BMP #1, the permittee shall conduct outfall field screening, identifying the source of any illicit discharges, & remove or correct any illicit discharges using procedures developed under BMP #1.
BMP #5 Enact a stormwater management ordinance (municipal entities) or develop an SOP (non-municipal entities) to implement & enforce a stormwater management program that includes prohibition of non-stormwater discharges to the regulated small MS4.
BMP #6 Provide educational outreach to public employees, business owners & employees, property owners, the general public & maintenance of the necessary E&S control measures. Your program shall describe how your program will be coordinated with DEP's NPDES Construction Stormwater Permitting Program.

MCM #4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL
BMP #1 Develop your program consisting of all procedures necessary to comply with the requirements of this MCM. Your program shall provide for stormwater permitting, construction inspection, and enforcement of installation & maintenance of the necessary E&S control measures. Your program shall describe how your program will be coordinated with DEP's NPDES Construction Stormwater Permitting Program.
Recommendation: Develop a tracking system that summarizes your actions to comply with this BMP (e.g. # of active construction sites, inspections, enforcement actions, etc.) & which can be described in a summary report format.
BMP #2 The permittee shall enact, implement, & enforce an ordinance to require the implementation of E&S control, as well as sanctions to ensure compliance.

MCM #5 POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT & REDEVELOPMENT
BMP #1 Develop a written procedure that describes how the permittee shall address all required components of this MCM. Guidance can be found in the PA Stormwater BMP Manual. Shall include: minimum requirements for use of structural and/or non-structural BMPs in plans for development & redevelopment; criteria for selecting & standards for sizing stormwater BMPs; implementation of an inspection program to ensure that BMPs are properly installed (intent is for the permittee to describe how the list of tasks will be accomplished).
BMP #2 Require the implementation of a combination of structural and/or non-structural BMPs that are appropriate to the local community, that minimize water quality impacts, & that are designed to maintain pre-development runoff conditions. This requirement can be met by ensuring that the selected BMPs comply with the Municipal Stormwater Management Ordinance that meets the requirements of the permit. (A tracking system of all projects & their associated BMPs in your records, you shall note if there are no qualifying projects in a calendar year.)
BMP #3 Ensure that controls are installed that shall prevent or minimize water quality impacts. (Track the inspection conducted and track the results of the inspections (e.g. BMPs were, were not, installed properly). A permittee shall implement, & enforce an ordinance (municipal) or SOP for regulatory mechanism (non-municipal) to address post-construction stormwater runoff from new development & redevelopment projects, as well as sanctions & penalties associated with non-compliance with the extent allowable under State or local law. (All permittees shall submit a letter signed by a municipal official, municipal engineer, or the municipal solicitor as an attachment to their first periodic report certifying the enactment of a stormwater management ordinance that meets the requirements of this permit).
BMP #4 Ensure implementing BMPs to encourage & expand the use of Low Impact Development (LID) in new & redevelopment. Measures should be included to encourage retrofitting LID into existing development. DEP's PA SWPA Manual provided guidance on implementing LID practices.
BMP #6 Ensure adequate operational & maintenance (O&M) of all post-construction stormwater management BMPs installed at all qualifying development or redevelopment projects (i.e. those owned or operated by the permittee). An inventory of all BMPs shall be developed by permittees & shall be continually updated during the term of coverage under the permit as development projects are reviewed, approved, & constructed. Shall include all required BMPs installed since March 10, 2003 that discharge directly or indirectly to your regulated small MS4.

MCM #6 POLLUTION PREVENTION / GOOD HOUSEKEEPING
BMP #1 Identify & document all facilities & activities that are owned or operated by the permittee and have the potential for generating SW runoff to the regulated small MS4. Includes activities conducted by contractors for the permittee; such as street sweeping, snow removal, steaming, mowing, loafing, etc. (Grass, general storm sewer system inspections & maintenance, repairs, park & open space maintenance, vehicle operation (fueling, washing, & maintenance), material transfer operations. Facilities can incl. streets, roads, highways, parking lots, maintenance & storage yards, waste transfer stations, parks, fleet or maintenance shops, wastewater treatment plants, stormwater conveyances, riparian buffers, & stormwater storage or treatment units (e.g. basins, infiltration/retention structures, constructed wetlands, etc.). (This inventory list shall be reviewed & updated each year of permit coverage, as needed.)
BMP #2 Develop, implement, & maintain a written O&M program for all municipal operations & facilities that could contribute to the discharge of pollutants from the regulated small MS4, as identified under BMP #1. This
MCM #1: Public Education

- Key idea is to educate the public
Storm Drain Marker Project

- Over 600 markers installed in urbanized areas of the County
- Public education and awareness
- Calls have been received
- Strong support of local officials
- Paired with brochure: “Only Rain Down the Storm Drain”
Display Boards
EnviroScape

- Watershed Educational learning tool
- Donated to the County
MCM #2: Public Involvement

- Key idea is to **involve** the public in MS4 activities
MCM #3: Illicit Discharge Detection and Elimination (IDD&E)

- Key idea is to locate and stop non-stormwater discharges
- Map your MS4 system (includes ditches, swales, BMPs)
MCM #4: Construction Site Runoff Control

- Key idea is to apply erosion/sedimentation controls during construction
- Generally handled by County Conservation District
MCM #5: Post-Construction Stormwater Management

• Key idea is to apply post-construction stormwater management controls (BMPs)
• BMP criteria and standards; inspection program
• Future of TMDL compliance lies in MCM #5
BMPs Everywhere

At-Home Practices:
• Disconnect downspouts
• Rain barrels
• Rain gardens

Municipalities/Developers:
• Street trees
• Pervious pavement
• Infiltration practices (rain gardens, bioswales, etc.)
• Retrofit older stormwater facilities
• Underground storage
• Green roofs
Understanding BMP Function: Two Key Concepts Concepts

Main Branch of Perkiomen Creek at East Greenville, PA
Hydrograph of Stream Flow, Phosphorus Concentration and Suspended Solids Concentration

First Flush

- Blue: Hydrograph
- Green: Phosphorus
- Red: Suspended Solids

Mar-93

0:00 6:00 12:00 18:00 0:00 6:00 12:00 18:00 0:00 6:00 12:00 18:00

Smaller-Scale Examples
Retrofit Existing Practices

Before Planting

After Planting

Before

After
Doubling Down on MCMs

[Image: A sign titled "Rain Capture" showing a map with various text labels and a graphic of rainwater collection areas.]

[Image: A wet street with water flowing through a rain garden.]
BMP Demonstration Projects

[Images showing BMP demonstration projects, including a sign and a view of a grid-like surface next to a building.]

Funding provided in part by a Growing Green Grant from the Pennsylvania Department of Environmental Protection.

For more information on low impact development, please visit www.EndlessMountainsLID.org/UD
MCM #6: Good Housekeeping

- Key idea: minimize stormwater pollution from municipal operations
Chesapeake Bay Pollutant Reduction Plan (CBPRP)

- New requirement created for current MS4 permit cycle
  - Required PE seal
  - Reduce Pollutants
    - Nitrogen, phosphorus, sediment
    - BMPs identified
- Big changes for next permit cycle
MS4 Challenge: New Way of Thinking for Municipalities

- Collect and convey vs. retain and infiltrate
- Cost investment
  - Retrofits vs. new construction
- Perception that “it doesn’t work”
- Maintenance concerns
- Difficulty with documenting/inspecting/maintaining privately owned facilities
- Overcoming status quo is difficult
Missed Opportunities
Missed Opportunities
Missed Opportunities
Missed Opportunities
Where is Lycoming County?
MS4 Permittees in Lycoming County
First Generation MS4 Permit

• 2003-2013: First permit cycle for Lycoming County MS4s (5 year cycle + extensions)
  – 7 permittees and Lycoming County began working together cooperatively to apply for MS4 permits
  – Others obtained waivers
First Generation MS4 Permit

- Group met approximately 1-3 times/year
- County Environmental Planners offered free organization and support through multiple staff changes
- Undertook some joint activities, coordinated with DEP, and worked on annual reports
- “Good faith effort” enforcement by DEP
Second Generation MS4 Permit

- 2013-now: Second permit cycle for Lycoming County MS4s
  - Permits issued in 2013/2014
  - New requirements and accountability measures from DEP / EPA
  - MS4 compliance no longer a “part-time job”
Second Generation MS4 Permit

- 8 MS4s on Joint IP
- 2 PAG-13s
  - Staggered permit timelines = potential barrier to future collaboration
- MS4 Planner housed at County Planning
- MS4 Coalition meets monthly
  - Sets priorities and provides direction
- Formal partnership agreement established in 2014 via MOA
  - Renewed 2015—unanimously*
Where We’re Headed

Next permit cycle:
• New MS4s
• Working to align timelines
• CBPRP due with permit application
• 10% sediment reduction through BMP implementation
• More aggressive inspections

Open questions:
• Nutrient trading
• Costs and financing options

subject to change
Takeaways

1. Build partnerships
   MS4s, County Government, Conservation Districts, PSU
   Master Gardeners, non-profits, colleges/schools, others
2. Variety of organizational structures can work
3. Need a “spark plug” to pull it all together
4. Talk to DEP early and often (regional and central)
5. Share costs, share burdens
6. Double up on MS4 activities
7. Prepare your elected officials
8. Start reserving space for BMPs
9. Look at retrofits, flood buyouts, municipal property
10. Early adoption of BMPs has pros and cons
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